



Rimkus Consulting Group, Inc.
Eight Greenway Plaza, Suite 500
Houston, TX 77046
(800) 580-3228 Telephone
(713) 623-4357 Facsimile

Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2016

August 15, 2016

Re: RCG File No: 11009971
LLV Number: 0209452
VMF Location: 1530 Greensmark Drive in Houston, Texas
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 0209452, VIN 1GBCS10E4M2908832. The fire occurred on June 13, 2016 at around 12:30 P.M. the operator of the vehicle at the time of the fire, was unavailable for interview but reportedly stated the vehicle's engine died while delivering mail on his route and backfired during subsequent attempts to restart it. Soon thereafter, smoke was observed from beneath the hood as well as flames.

On June 21, 2016, we conducted our investigation at the USPS Vehicle Maintenance Facility located at 1530 Greensmark Drive in Houston, Texas. We reviewed available service records, and examined and documented the fire-damaged remains of the vehicle. This report and case was reviewed by Jack R. Kennedy, III, Technical Fire Manager.

While conducting our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be on the left (mail) side of the engine compartment in the area of the fuel filter.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of gasoline vapors from a loose connection to the fuel filter which were ignited on the hot surface of the operating exhaust manifold.

Observations

Exterior Inspection:

Exterior examination of the vehicle revealed severe fire damage concentrated to the interior of the engine compartment. The most severe fire damage was observed with respect to the left side of the compartment, opposite the driver station on the right side.

The left side portion of the engine hood cover was melted and consumed. Although damaged on their interior side, both front tires were still inflated.

Interior Inspection:

Our interior examination revealed severe fire damage on the left side of the driver compartment corresponding with the area within the engine compartment described previously. This damage was a result of the fire breaching through the firewall between the compartments and spreading into the interior driver and cargo areas.

Engine Compartment Inspection:

Inspection of the engine compartment revealed loose components (i.e. breather cover, hoses, oil cooler, metal mounting brackets, etc.) that were damaged during the fire, lying on top of the fire-damaged engine. Several of these had been dislocated during the extinguishment of the fire and its transfer to the facility location at 1533 Greensmark Drive in Houston, Texas where our examination took place.

The engine and components were photographed and examined in place before removing them to examine burn and heat stress patterns to identify the area of the fire's origin and source of ignition.

The lowest and most severe concentration of fire damage was on the lower left side of the engine in the area where the vehicle's fuel filter was installed adjacent to the exhaust manifold components. The filter itself was missing and either consumed during the fire or lost during transfer of the vehicle after the fire. The flexible lines and clamp connections securing the filter to the fuel supply lines were also missing.

Undercarriage Inspection:

No remarkable fire damage was observed below the vehicle to indicate or suggest the fire originated beneath it. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

Damage to the vehicle's fuse panel prevented any conclusive determination with respect to the rating, status, or condition of the fuses after the fire.

Area of Fire Origin:

Based on the facts and circumstances of the event, the remaining available physical evidence indicates the fire originated on the left side of the engine in the immediate area of the fuel filter.

The probable first fuel ignited was fugitive fuel vapors from the fuel filter or its connections. The probable source of the fire's ignition was the hot operating components of the manifold exhaust system in close proximity to the filter's installation.

Contributing Factors:

The fuel filter and its connections were consumed or lost during transfer of the vehicle to storage and, for this reason, were unavailable for examination.

The probable cause of the fire was likely related to improper installation, inspection, and maintenance of the fuel filter.

During our examination, records regarding when the filter was installed and last inspected, and by whom, could not be located by facility personnel.

Apart from this, we recommend that consideration be given to examining similar vehicles and relocating the fuel filter to a location that is not immediately adjacent the exhaust manifold components.

Evidence Collected:

No physical evidence was collected during our examination.

Service Records:

A review of the service records for the involved LLV was conducted and there were no recent repairs or replacements listed that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Joseph M. Ellington

Joseph M. Ellington, IAAI-CFI
Regional Fire Division Manager

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 15, 2016
RCG File No. 11009971

Photograph 1

View of fire-damaged vehicle from right front corner on driver side.



Photograph 2

View from right side.



August 15, 2016
RCG File No. 11009971

Photograph 3

View of engine compartment.



Photograph 4

Right driver side (i.e. at left) and front of engine compartment shows comparatively less fire damage than opposite side (i.e. on right.).



Photograph 5

Left side view from front. Arrow indicates left side of engine within the engine compartment where the fire originated.



August 15, 2016
RCG File No. 11009971

Photograph 6

Left side profile view from rear corner of cargo area.



Photograph 7

View of interior of driver compartment showing breach of fire through firewall from engine compartment on left side into the compartment.



Photograph 8

View from interior of compartment through breach of consumed firewall through left side of engine compartment.



Photograph 9

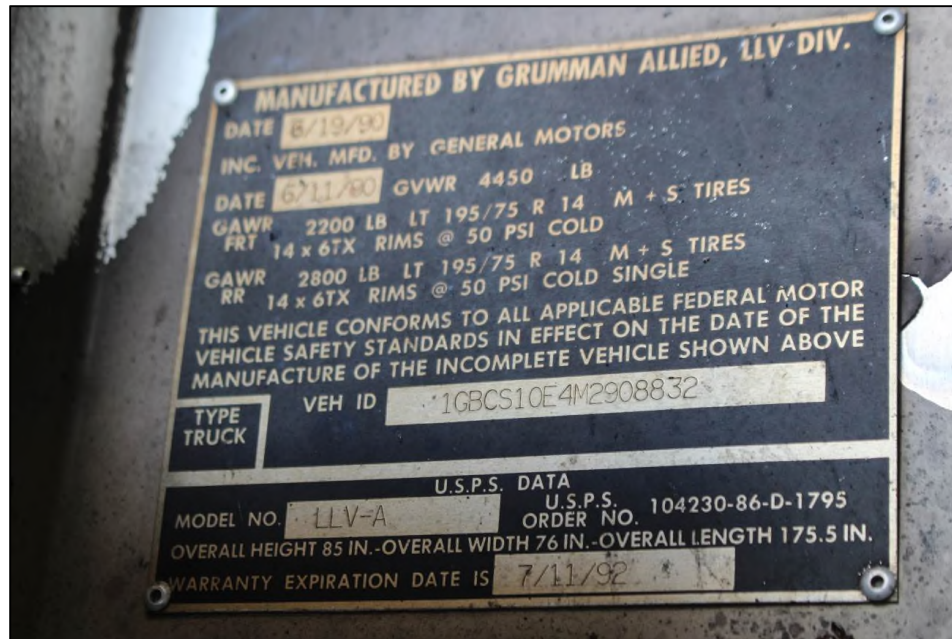
View of interior of rear cargo area showing heat stress and smoke penetration into the compartment from the fire that originated inside the engine compartment before breaching through the firewall into the driver compartment.



August 15, 2016
RCG File No. 11009971

Photograph10

Manufacturer's identification label inside driver compartment.



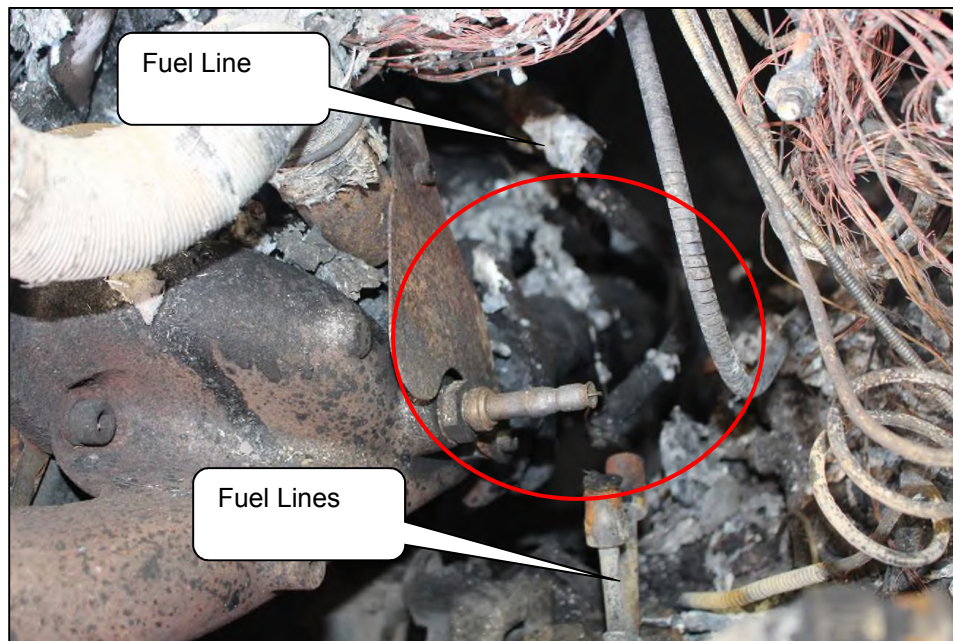
Photograph 11

Area of fire origin prior to removal of components and debris that were damaged by the fire and dislocated during subsequent of the vehicle to storage and prior to the examination.



Photograph 12

Area of fire origin where fuel filter was installed near exhaust manifold components. The filter itself, and connections, were either consumed during the fire lost during transfer of the vehicle.



Photograph 13

Closer view of same area showing damaged fuel lines and area of missing fuel filter.



Photograph 14

Photo of exemplar vehicle similar to the damaged one that shows mounting location of installed fuel filter and connection to fuel lines.



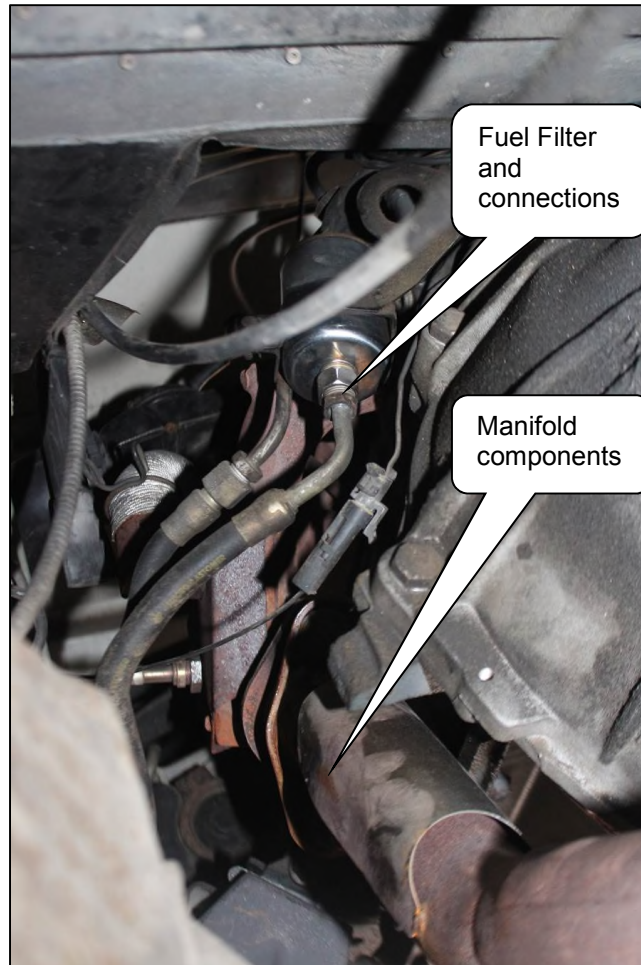
Photograph 15

Close-up of exemplar fuel filter installation on exemplar vehicle.



Photograph 16

View of exemplar vehicle and fuel filter installation and connected fuel lines from below undercarriage.



August 15, 2016
RCG File No. 11009971

CVs



**JOSEPH M. ELLINGTON, IAAI-CFI, NAFI-CFEI, CFII, & CVFI
REGIONAL FIRE DIVISION MANAGER**

Mr. Ellington has over 30 years of experience in the field of advanced technical investigations including a combination of field and management assignments in both small and large scale fire and explosion property losses, fire death and injury cases, product defects and liability cases, arson for fraud investigations, vehicle accident investigation and reconstruction, computer forensics, premises safety and security, and training & development solutions. Specific areas of expertise include primary responsibility for the direct management and supervision of cases where the origin, cause and responsibility of fires and explosions are at issue. These assignments involve residential, commercial, industrial, marine, off-shore production platforms, wind turbines, chemical and manufacturing plants and warehouses, heavy equipment, vehicles, product liability and injury/death related fires and explosions.

Consulting expertise includes evaluation of litigation related matters involving the case areas described above as well as explosions involving LPG, Natural gas, and high explosives, fire code and standards compliance, product and label warning evaluations, fire detection and response systems, computer fire modeling and simulation, investigation of fraud related fire incidents, computer forensics involving fire damaged systems, and vehicle accident investigation and reconstruction.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Post Graduate Studies – University of New Haven
Post Graduate Studies – Sam Houston State University
B.S. – Law Enforcement – Sam Houston State University
A.A.S. – Police Science – South Texas Junior College
National Association of Fire Investigators
International Association of Arson Investigators
International Association of Bomb Technicians & Investigators
National Fire Protection Association

EMPLOYMENT HISTORY

2005 – Present	Rimkus Consulting Group, Inc.
2001 – 2005	EFIGlobal, Inc.
1984 – 2000	Texas Investigative Consultants
1983 - 1983	Hicks & Sanchez Fire Investigations
1980 – 1982	Heliflight Systems
1976 – 1980	North Harris College
1971 – 1976	Texas Dept. of Public Safety
1969 – 1971	United States Army



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
921 Eastwind Drive, Suite 110
Westerville, OH 43081
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

March 29, 2017

Re: RCG File No:

LLV Number: 53602445
VMF Location: 3318732
Subject: 4515 Franklin Avenue in Norwood, Ohio
Preliminary/Final Report

Dear

On February 17, 2017, a fire occurred in a US Postal Service vehicle at 8500 Beechmont Avenue in Cincinnati, Ohio. On February 22, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1993 GMC LLV 3318732, VIN 1GBCS1044RZ904939. On March 3, 2017, we conducted a fire origin and cause examination on the vehicle at the Norwood Aux VMF located at 4515 Franklin Avenue in Norwood, Ohio.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant W. Timothy Spradlin, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the headlamp switch positioned in the left side of the dashboard.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch, which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. The exterior of the vehicle was in fair condition. The rear cargo area, both side doors, and all four tires were intact. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire. There was no visible fire or smoke damage on the exterior of the vehicle.

Interior Inspection:

Examination of the interior of the vehicle revealed moderate fire damage to the passenger compartment and smoke staining to the cargo area. Minor fire damage was observed in the cargo area. The most severe fire damage was observed to the dashboard area, firewall, steering wheel assembly, and driver's seat. Based on the fire patterns observed, the dashboard area in front of the driver's seat behind the headlight switch assembly area was determined to be the area of origin. We observed the remains of dry chemical fire extinguishing agent in the driver's compartment. We observed minimal fire and heat damage to the left side of the steering column and attached components. We observed a small amount of melted plastic that had dripped down onto the vinyl floor covering.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine. No fire damage was observed in the engine compartment. The air filter cover and filter were examined and observed with no fire damage. The electrical wiring that transverse the engine compartment were observed with no fire damage, thus eliminating them as a cause. The fuel system was examined and found to be intact and observed with no fire damage. The fuel filter was observed with no fire damage. The fuel system was the GM model.

The battery for the vehicle was located at the front right side of the engine compartment and observed with no fire damage. The battery, the battery terminals and battery cables were examined and found with no fire damage and no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range. The carburetor was examined and observed with no fire damage.

An examination of the engine block was conducted. No fire damage was observed to the engine block. No internal failures of the engine were observed.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks or failures.

Fuse Panel Inspection:

There was no fire damage to the fuse panel. We examined the fuses related to the headlights and flashers. There were no fuses found to be blown.

Area of Fire Origin:

Based on our observations it was our opinion the area of fire origin was in the driver compartment on the left side of the steering column at the headlight dimmer switch. Fire damage was limited to melting and some char to the plastic switch body and adjacent electrical circuits.

Contributing Factors:

The LLV reportedly was being driven at the time of the fire. The headlamps were in the "on" position per policy. A failure of the rheostat switch caused it to heat and ignited surrounding combustible materials. Based on our examination, it is our opinion overheating of the rheostat switch was the source of the fire ignition.

Evidence Collected:

No evidence was collected.

Interviews:

On March 3, 2017 we interviewed VMF manager and staff at the Norwood facility. Mr. stated that carrier was driving a delivery route when she saw smoke and a small flame on the left side of the steering column near her left leg. She immediately stopped in a convenience store parking lot, obtained a fire extinguisher, and discharged it onto the flame. Mr. stated that the vehicle was operating properly prior to the fire. According to the maintenance records for the vehicle, it had a new headlight switch installed in January, 2017 and also in May, 2016. He stated that all new parts are received from Wheeler Brothers Supply under a contract with USPS. Mr. stated that headlight and dimmer switch failures are common in the LLV fleet. He and his staff stated in their opinion the basis for this problem is a combination of factors concerning wire size and frequency of headlight flasher use. He said the original lightweight 16 gauge wiring circuits in the LLV's frequently fail with the USPS policy changes requiring headlight and flasher be used almost constantly when on a route. Mr. stated that many of the failures are due to overheating and melting but don't always catch fire, so may not be reported for investigation. He stated that his VMF staff is addressing the problems by replacing lights with LED fixtures whenever possible. He stated they are also upgrading the LLV electrical circuits to 12 gauge wire whenever they can during repair work.

Service Records:

A review of the provided service records for the involved LLV was conducted. According to the maintenance records for the vehicle, it had a new headlight switch installed in January of 2017 and also in May of 2016.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,

RIMKUS CONSULTING GROUP, INC.

W. Timothy Spradlin

W. Timothy Spradlin, IAAI-CFI, NAFI-CVFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 29, 2017
RCG File No. 53602445

Photograph 1

Driver door right side with dry chemical agent on floor and steering column.



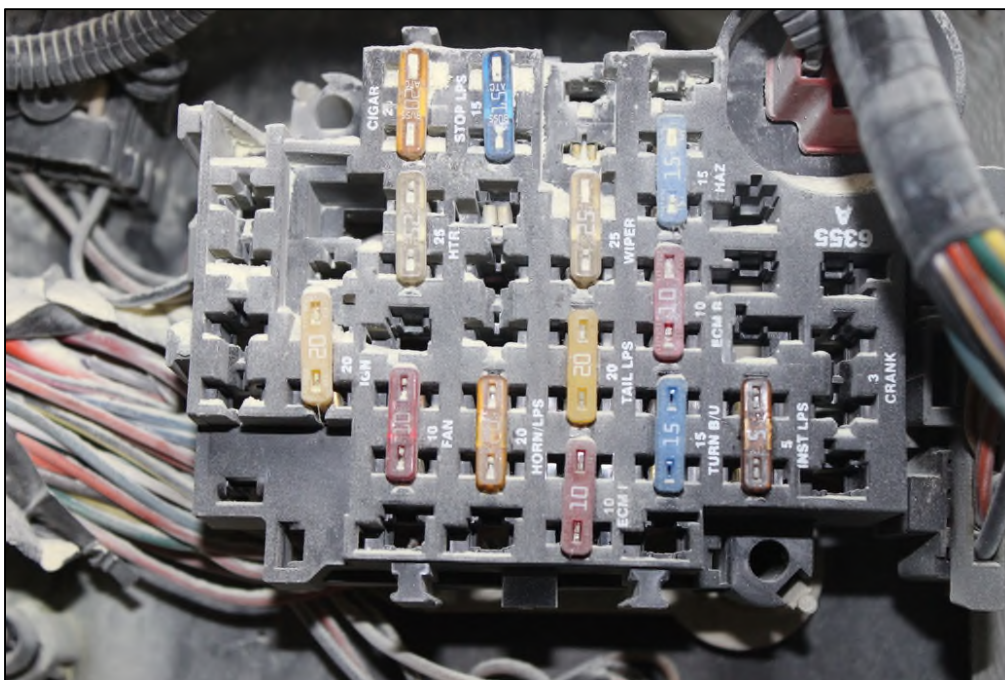
March 29, 2017
RCG File No. 53602445

Photograph 2

Fire damage limited to left side of steering column at headlight dimmer flasher switch.



Fuse panel was undamaged and all fuses were intact operational.



Switch removed from vehicle with heat and fire damage to components.



Photograph 5

The remains of the head light switch assembly.



Photograph 6

The steering wheel and column; observe the severe fire damage to the dashboard area.



March 29, 2017
RCG File No. 53602445

CVs



**WILLIAM TIMOTHY SPRADLIN, IAAI-CFI, CI, FIT, NAFI-CFEI
Fire Consultant**

Mr. Tim Spradlin has over 35 years' experience in firefighting, law enforcement, fire, arson and bombing investigation. His fire / explosion investigation work spans over 20 years of service, and he has three related college degrees. His career includes work as a full-time fire lieutenant, captain, deputy chief and fire chief in Xenia Township, Ohio. Mr. Spradlin also served as a reserve deputy sheriff with the Greene County Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He retired from 32 years public safety work as the Chief of the State of Ohio Fire Marshal's Fire – Explosion Investigation Bureau. From January 2008 until September 2014 Mr. Spradlin was the full-time chief fire / arson investigator for Ohio. He was also the curriculum manager / instructor for the Ohio Fire Academy fire investigation programs.

Mr. Spradlin also served in the United States Air Force, where he served 4 years active duty and 26 years reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant / First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the US Army in 2007 for combat meritorious service.

He currently serves as a police officer in the Village of Yellow Springs and as a volunteer fire training officer with the Xenia Township Fire Department in Ohio. Mr. Spradlin also teaches in the Clark State Community College fire programs and the Sinclair Community College Basic Police Officer Training Academy.

Mr. Spradlin is a certified fire investigator (CFI), fire investigation technician (FIT) and certified instructor (CI) by the International Association of Arson Investigators (IAAI). He is also a certified fire explosion investigator (CFEI) by the National Association of Fire Investigators (NAFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Bachelor of Science Degree in *Organizational Management* from Wilberforce University, Xenia, Ohio
Associates Degree in *Human Resource Management*, Air University CCAF, Gunter AFS, Alabama
Associates Degree in *Fire Science Technology*, Air University CCAF, Gunter AFS, Alabama
National Fire Academy *Arson Interview, Interrogation and Courtroom Testimony* course
National Fire Academy *Executive Analysis of Fire Operations in Emergency Management*
National Fire Academy *Executive Development* Program
National Fire Academy *Executive Planning* Program
Ohio Fire Academy *Basic Fire Investigation* and *Advanced Fire Investigation* programs
USAFR *Senior NCO Leadership Development Course*, Robins AFB, Georgia
Sinclair Community College Criminal Justice Academy, Dayton, Ohio

Member of the International Association of Arson Investigators (IAAI) and of the Ohio Chapter IAAI
Member of the National Association of Fire Investigators (NAFI)
Member of the National Society of Professional Insurance Investigators (NSPII)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
8659 Baypine Road, Suite 301
Jacksonville, FL 32256
(877) 661-1245 Telephone
(904) 739-2910 Facsimile
Certificate of Authorization No. 8301

March 29, 2017

Re: RCG File No.:

LLV Number: 44103968
VMF Location: 4307708
Subject: 1100 Kings Road in Jacksonville, Florida
Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retaining to examine the vehicle fire loss involving USPS LLV 4307708, VIN 1GBCS1040R2913752. The vehicle was examined at the USPS Jacksonville VMF located at 1100 Kings Road in Jacksonville, Florida. The fire incident occurred on February 28, 2017.

In the course of our work, we examined and documented the fire damaged vehicle on March 14, 2017. Our work to complete this assignment was performed by Fire Consultant William T. Schorn, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach was recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations."

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be at and around the battery positioned on the right side of the engine compartment at the terminal.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of the battery cable that had sustained mechanical damage. The cable was in a position where it contacted the bracket, which caused the insulation to become chaffed over time and caused the conductor to come in contact with the metal bracket causing an adverse electrical event.

Observations

Exterior Inspection:

Examination of the vehicle began at the rear of the vehicle and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The roof above the operator compartment had been partially consumed during the fire event. The driver's side sliding door was intact with the exception of smoke and heat damage along the upper portion of the frame. The mail side door sustained heat and smoke damage to the upper portions of the door frame during the fire progression. The cargo compartment roof was almost completely intact. The rear and mail side exterior walls suffered moderate smoke and heat damage. The driver side exterior wall also sustained moderate smoke and heat damage.

Interior Inspection:

While examining the interior of the vehicle, the operator's compartment revealed severe fire damage while the cargo compartment sustained moderate smoke and heat damage. An analysis of the fire patterns in this area indicated that the fire extended into this area from the engine compartment and did not originate on the interior.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. We observed severe fire damage to the engine compartment including all combustibles

within the engine compartment. We were able to detect an acceptable level of oil on the dipstick. We also examined the transmission fluid level and detected an acceptable level of fluid on the dipstick. We were unable to examine the power steering fluid due to the severe fire damage in the engine compartment. The battery and fuse panel suffered severe fire damage.

While examining the battery cables, we observed arcing and separation to the cable leading from the battery to the starter. The plastic insulation on the battery cable had been consumed by fire and while examining the bracket closest to the starter, we observed arc damage. There was a total of two brackets that were used to secure the cable. The cable was separated at the bracket during the fire event and an arc bead was observed to the upper portion of the cable.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of fire damage along the bottom side of the engine as well as the sides of the engine. The involved LLV was mounted on a GM frame. The fuel lines were examined and it appeared the lines had failed during the fire progression. The fuel tank was examined and the vehicle fuel filter system was equipped with a GM filter. Both were free of fire damage. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed severe fire damage to the panel and all of the fuses. Due to the severe fire damage, we were not able to determine if any fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment. The specific area of origin was at and around a battery cable routed through the area of fire origin that sustained severe adverse electrical damage.

Contributing Factors:

The involved battery cable potentially sustained mechanical damage at the position where it contacts the bracket which caused the insulation to become chaffed over time and caused the conductor to come in contact with the metal bracket causing an adverse electrical event.

Evidence Collected:

No evidence was collected from the vehicle.

Interviews:

On March 14, 2017, we interviewed the Supervisor of Vehicle Maintenance at the Jacksonville, Florida VMF. We learned the carrier had returned to his vehicle after delivering mail to a complex and when he attempted to start the vehicle. Smoke was observed coming from the top of the hood near the windshield. Mr. provided maintenance records for the vehicle for the past two years and the vehicle battery had been replaced twice in that same period of time.

The carrier provided a written statement as well as a statement on March 15, 2017, via telephone call. Mr. said as he approached the complex, the vehicle's engine stalled. He said this had happened previously so he didn't think much of it. After finishing his delivery, he attempted to start the vehicle, but the engine would not turn over. He started to smell a burning odor and next observed black-colored smoke originating from the top of the hood near the windshield. He pushed the vehicle away from the building and started to remove the mail from the vehicle. The smoke was increasing, but he didn't observe any active fire. He asked a resident to borrow a garden hose. The resident brought a fire extinguisher to the vehicle, but by this time, active fire was observed to the vehicle. The resident called 911.

Mr. stated he had operated the same vehicle for the past eight to nine years and hadn't experienced any major mechanical problems with the vehicle.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Schorn

William T. Schorn, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 29, 2017
RCG File No. 44103968

Photograph 1

A view of the front and driver side of LLV 4307708.



Photograph 2

A view of the rear and passenger side of LLV 4307708.



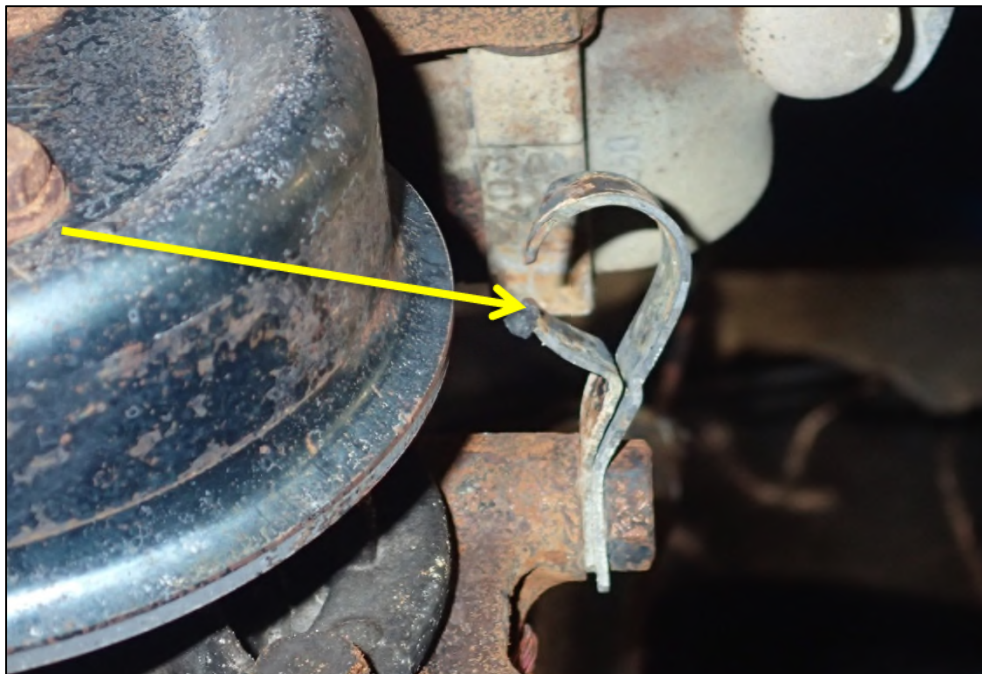
Photograph 3

A view of the severe damage to the engine compartment.



Photograph 4

A view of the arc-damaged cable bracket leading from the battery to the starter.



Photograph 5

A view of an arc bead to the upper portion of the battery cable.



Photograph 6

A view of the arc damage to the lower portion of the battery cable.



March 29, 2017
RCG File No. 44103968

CVs



**WILLIAM SCHORN, I.A.A.I., C.F.I., C.F.E.I., C.V.F.I.
FIRE CONSULTANT**

Mr. Schorn attended the University of South Florida majoring in Criminal Justice. Mr. Schorn's professional career includes over 30 years with the St. Petersburg Police Department. During his tenure with the police department, he was a Patrolman, Field Training Officer, Surveillance Detective, and Auto Theft Detective. For his last 19 years, he was assigned to the fire department to conduct fire investigations. In addition to the latent investigation, he also conducted the origin and cause investigations. Mr. Schorn was also the lead fire investigator for the City of St. Petersburg from 2006 until his retirement.

Mr. Schorn is a Certified Fire Investigator with the International Association of Arson Investigators, as well as a Certified Fire and Explosive Investigator and Certified Vehicle Fire Investigator with the National Association of Fire Investigators. He has been rendered an expert regarding fire investigations in criminal court. As the arson investigator assigned to the fire department, he assisted conducting the fire origin and cause investigation, as well as the criminal investigations. During the 19 years he was assigned to the fire department, he conducted approximately 1936 fire investigations. Since 2005, he has conducted approximately 493 origin and cause investigations, in which approximately 168 cases have been determined to be incendiary. Mr. Schorn also holds a private investigator license in the state of Florida (PI License number C1400618).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Law Enforcement Certification - Saint Petersburg Junior College (1984)
Criminal Justice – St. Pete College/University of South Florida (1980 -1984)
Professional Arson Co-Op of Florida
Florida Advisory Committee on Fire Prevention (FACAP)
International Association of Arson Investigators
International Association of Arson Investigators (FL Chapter)
National Association of Fire Investigators
Certified Fire and Explosive Investigator - National Association of Fire Investigators (2002)
Certified Fire Investigator - International Association of Arson Investigators (2009)
Certified Vehicle Fire Investigator (2013)

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1984 – 2015	Saint Petersburg Police Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
8659 Baypine Road, Suite 301
Jacksonville, FL 32256
(877) 661-1245 Telephone
(904) 739-2910 Facsimile
Certificate of Authorization No. 8301

March 29, 2017

Re: RCG File No.:

LLV Number: 44103968
VMF Location: 4307708
Subject: 1100 Kings Road in Jacksonville, Florida
Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retaining to examine the vehicle fire loss involving USPS LLV 4307708, VIN 1GBCS1040R2913752. The vehicle was examined at the USPS Jacksonville VMF located at 1100 Kings Road in Jacksonville, Florida. The fire incident occurred on February 28, 2017.

In the course of our work, we examined and documented the fire damaged vehicle on March 14, 2017. Our work to complete this assignment was performed by Fire Consultant William T. Schorn, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach was recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations."

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be at and around the battery positioned on the right side of the engine compartment at the terminal.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of the battery cable that had sustained mechanical damage. The cable was in a position where it contacted the bracket, which caused the insulation to become chaffed over time and caused the conductor to come in contact with the metal bracket causing an adverse electrical event.

Observations

Exterior Inspection:

Examination of the vehicle began at the rear of the vehicle and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The roof above the operator compartment had been partially consumed during the fire event. The driver's side sliding door was intact with the exception of smoke and heat damage along the upper portion of the frame. The mail side door sustained heat and smoke damage to the upper portions of the door frame during the fire progression. The cargo compartment roof was almost completely intact. The rear and mail side exterior walls suffered moderate smoke and heat damage. The driver side exterior wall also sustained moderate smoke and heat damage.

Interior Inspection:

While examining the interior of the vehicle, the operator's compartment revealed severe fire damage while the cargo compartment sustained moderate smoke and heat damage. An analysis of the fire patterns in this area indicated that the fire extended into this area from the engine compartment and did not originate on the interior.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. We observed severe fire damage to the engine compartment including all combustibles

within the engine compartment. We were able to detect an acceptable level of oil on the dipstick. We also examined the transmission fluid level and detected an acceptable level of fluid on the dipstick. We were unable to examine the power steering fluid due to the severe fire damage in the engine compartment. The battery and fuse panel suffered severe fire damage.

While examining the battery cables, we observed arcing and separation to the cable leading from the battery to the starter. The plastic insulation on the battery cable had been consumed by fire and while examining the bracket closest to the starter, we observed arc damage. There was a total of two brackets that were used to secure the cable. The cable was separated at the bracket during the fire event and an arc bead was observed to the upper portion of the cable.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of fire damage along the bottom side of the engine as well as the sides of the engine. The involved LLV was mounted on a GM frame. The fuel lines were examined and it appeared the lines had failed during the fire progression. The fuel tank was examined and the vehicle fuel filter system was equipped with a GM filter. Both were free of fire damage. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed severe fire damage to the panel and all of the fuses. Due to the severe fire damage, we were not able to determine if any fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment. The specific area of origin was at and around a battery cable routed through the area of fire origin that sustained severe adverse electrical damage.

Contributing Factors:

The involved battery cable potentially sustained mechanical damage at the position where it contacts the bracket which caused the insulation to become chaffed over time and caused the conductor to come in contact with the metal bracket causing an adverse electrical event.

Evidence Collected:

No evidence was collected from the vehicle.

Interviews:

On March 14, 2017, we interviewed the Supervisor of Vehicle Maintenance at the Jacksonville, Florida VMF. We learned the carrier had returned to his vehicle after delivering mail to a complex and when he attempted to start the vehicle. Smoke was observed coming from the top of the hood near the windshield. Mr. provided maintenance records for the vehicle for the past two years and the vehicle battery had been replaced twice in that same period of time.

The carrier provided a written statement as well as a statement on March 15, 2017, via telephone call. Mr. said as he approached the complex, the vehicle's engine stalled. He said this had happened previously so he didn't think much of it. After finishing his delivery, he attempted to start the vehicle, but the engine would not turn over. He started to smell a burning odor and next observed black-colored smoke originating from the top of the hood near the windshield. He pushed the vehicle away from the building and started to remove the mail from the vehicle. The smoke was increasing, but he didn't observe any active fire. He asked a resident to borrow a garden hose. The resident brought a fire extinguisher to the vehicle, but by this time, active fire was observed to the vehicle. The resident called 911.

Mr. stated he had operated the same vehicle for the past eight to nine years and hadn't experienced any major mechanical problems with the vehicle.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Schorn

William T. Schorn, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 29, 2017
RCG File No. 44103968

Photograph 1

A view of the front and driver side of LLV 4307708.



Photograph 2

A view of the rear and passenger side of LLV 4307708.



Photograph 3

A view of the severe damage to the engine compartment.



Photograph 4

A view of the arc-damaged cable bracket leading from the battery to the starter.



Photograph 5

A view of an arc bead to the upper portion of the battery cable.



Photograph 6

A view of the arc damage to the lower portion of the battery cable.



March 29, 2017
RCG File No. 44103968

CVs



WILLIAM SCHORN, I.A.A.I., C.F.I., C.F.E.I., C.V.F.I. FIRE CONSULTANT

Mr. Schorn attended the University of South Florida majoring in Criminal Justice. Mr. Schorn's professional career includes over 30 years with the St. Petersburg Police Department. During his tenure with the police department, he was a Patrolman, Field Training Officer, Surveillance Detective, and Auto Theft Detective. For his last 19 years, he was assigned to the fire department to conduct fire investigations. In addition to the latent investigation, he also conducted the origin and cause investigations. Mr. Schorn was also the lead fire investigator for the City of St. Petersburg from 2006 until his retirement.

Mr. Schorn is a Certified Fire Investigator with the International Association of Arson Investigators, as well as a Certified Fire and Explosive Investigator and Certified Vehicle Fire Investigator with the National Association of Fire Investigators. He has been rendered an expert regarding fire investigations in criminal court. As the arson investigator assigned to the fire department, he assisted conducting the fire origin and cause investigation, as well as the criminal investigations. During the 19 years he was assigned to the fire department, he conducted approximately 1936 fire investigations. Since 2005, he has conducted approximately 493 origin and cause investigations, in which approximately 168 cases have been determined to be incendiary. Mr. Schorn also holds a private investigator license in the state of Florida (PI License number C1400618).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Law Enforcement Certification - Saint Petersburg Junior College (1984)
Criminal Justice – St. Pete College/University of South Florida (1980 -1984)
Professional Arson Co-Op of Florida
Florida Advisory Committee on Fire Prevention (FACAP)
International Association of Arson Investigators
International Association of Arson Investigators (FL Chapter)
National Association of Fire Investigators
Certified Fire and Explosive Investigator - National Association of Fire Investigators (2002)
Certified Fire Investigator - International Association of Arson Investigators (2009)
Certified Vehicle Fire Investigator (2013)

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1984 – 2015	Saint Petersburg Police Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1661 East Camelback Road, Suite 124
Phoenix, AZ 85016
(866) 552-6758 Telephone
(602) 216-2201 Facsimile

March 29, 2017

Re: RCG File No:

	01708334
LLV Number:	4318316
VMF Location:	4949 East Van Buren Street in Phoenix, Arizona
Subject:	Preliminary/Final Report

Dear

Rimkus Consulting Group Inc. was retained to examine LLV 4318316, VIN 1GBCS104XR2923818. The vehicle was examined at the USPS Phoenix Vehicle Maintenance Facility (VMF) located at 4949 East Van Buren Street in Phoenix, Arizona. The fire incident reportedly occurred at the intersection of Sandretto Drive and Willow Creek Road on March 1, 2017.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on March 10, 2017. Our work to complete this assignment was performed by Fire Consultant Thomas D. Kane, IAAI-CFI. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator compartment of the involved LLV.

2. The specific area of origin was determined to be in and around the dashboard where the electrical wiring harness was routed.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of an electrical failure within the conductors associated with the electrical wiring harness routed behind the dashboard in the area of origin.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. The exterior of the vehicle was in fair condition. The rear cargo area, both side doors, and all four tires were intact. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire. Exterior fire damage consisted of a broken windshield, discoloration and loss of paint to the engine hood, and body damage caused by firefighters during suppression activities.

Interior Inspection:

The cargo area sustained minor smoke damage. The cab suffered moderate smoke damage and melting to the plastic components on the left side of the dashboard. The melted components consisted of the blower fan and wiring associated with the heater. The blower fan was encased in melted plastic. The wiring harness connector to the blower fan was burned away and separated from the fan. There were no obvious signs of unusual electrical activity on the cab wiring.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a General Motors (GM) 2.5L gasoline engine. Fire damage was confined to the left rear quadrant of the engine compartment. This area contained the heating element and cabin air intake. The aluminum fire wall that separates the engine compartment from the cab was melted in this area. The plastic and rubber engine components sustained radiant

heat damage that increased in severity as one moved closer to the left rear quadrant. The vehicle battery and engine fluid reservoirs were intact. There were no indications of a fuel or fluid leak prior to the fire.

Undercarriage Inspection:

The vehicle was mounted on a GM, S10 frame and the fuel filter was mounted underneath. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did reveal a possible leak around the speedometer gear housing unit. There was no fire damage to the undercarriage.

Fuse Panel Inspection:

The fuse panel was intact and there were no open circuits.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated underneath the left side of the dashboard, at the blower fan wiring harness.

Contributing Factors:

Contributing factors for the cause of this fire include a loose or damaged wiring connection at the blower fan harness. This resulted in resistive heating of the conductors, or an electrical arc, that ignited the wiring insulation, and a seized fan motor, which could have resulted in the fan motor windings overheating and igniting nearby combustible materials.

Evidence Collected:

No evidence was collected.

Interviews:

In a phone interview with the carrier he stated that he was returning to the office when the vehicle stalled in the road. He stated he was able to get the vehicle to restart and move the vehicle off the road area. When he pulled off the road he noticed smoke coming from the front of the LLV. He then contacted his supervisor

who called 911. He stated that by the time the fire department arrived, the front of the vehicle was on fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Thomas D. Kane

Thomas D. Kane, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 29, 2017
RCG File No. 01708334

Photograph 1

LLV 4318316, VIN 1GBCS104XR2923818.



Photograph 2

Exterior fire damage.



Photograph 3

Fire damage to engine. Hole melted through firewall.



Photograph 4

Left side of dashboard. Remains of wiring harness and blower fan on floor.



March 29, 2017
RCG File No. 01708334

CVs



**THOMAS D. KANE, I.A.A.I.-C.F.I., P.I.
FIRE CONSULTANT**

Mr. Kane specializes in fire origin and cause investigation, and consultation. Mr. Kane has over twenty-five years of experience in law enforcement with half of his career as an Arson Detective. Mr. Kane has investigated and determined the cause and origin of over six hundred fires occurring in commercial structures, residential homes, recreational vehicles, automobiles, and wild lands. Mr. Kane has been recognized as an expert witness in both criminal and civil court, in the fields of fire cause and origin, building construction, criminal investigations, firearms, transient criminal groups, and issues relating to building safety and security.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

State University of New York, College at Buffalo, Bachelor of Science, Criminal Justice.
City of New York, Police Academy, New York City Police Officer certification.
Suffolk County, New York, Police Academy, New York State Police Officer certification.
Phoenix Regional Police Academy, Arizona Police Officer certification.
International Association of Arson Investigators, Certified Fire Investigator, #28-036.
International Association of Arson Investigators, member since 2002.
International Association of Arson Investigators, Arizona Chapter, member since 2000.
Maricopa County Fire Investigation Task Force, member since 2000
FBI Joint Terrorism Task Force on Arson, formed to apprehend the "Phoenix Mountain Preserve Arsonist," in 2000.
National Association of Bunco Investigators, member since 1999.
Licensed Contractor, Arizona Registrar of Contractors, since 2000.
Licensed Private Investigator, Arizona Department of Public Safety, since 2004.

Mr. Kane has over five hundred hours of classroom and practical instruction in fire dynamics, arson, and general investigations. Classes have included interviews and interrogations, covert surveillance technology, fire science, fire behavior, fire chemistry, hazardous materials, flammable liquids, fire origin and cause determination, electrical fire investigation, explosion scene investigation, and evidence collection and preservation. These are to mention only some of the areas in which formal training has been received.

EMPLOYMENT HISTORY

1988 - 1989	New York City Police Department (NYPD)
1989 - 1993	Suffolk County Police Department (SCPD)
2004 - 2006	Crawford Investigative Services, Fire Investigator
2006 - 2008	Jerry James and Associates, Fire Investigator
2008 - 2013	Fire Cause Analysis, Fire Investigator
1993 - Present	Scottsdale Police Department (SPD)
2004 - Present	Private, Certified Fire Investigator (IAAI)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
3620 Horizon Drive, Suite 200
King of Prussia, PA 19406
(888) 623-1460 Telephone
(610) 941-1288 Facsimile

December 9, 2015

Re: RCG File No: 47701633
USPS LLV Number: 0206416
Exam Location: 1000 West Valley Road, Southeastern, Pennsylvania
Subject: Preliminary Report

Rimkus Consulting Group, Inc. was retained to examine LLV 0206416, VIN 1GBCS10E3M2905811. The vehicle was examined at the USPS Southeastern VMF located at 1000 West Valley Road, Southeastern, Pennsylvania. The fire incident reportedly occurred near 1745 South Easton Road, Doylestown, Pennsylvania.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on October 19, 2015. Our work to complete this assignment was performed by Fire Consultant Jonathan Sivils, IAAI-CFI. This case file was reviewed and finalized by Jack R. Kennedy, III, IAAI-CFI, Technical Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. After a thorough examination of the vehicle, it was found to have sustained severe fire damage and was rendered inoperable.
2. The area of fire origin was determined to be in the passenger compartment dashboard area. More specifically, in and around the electrical wiring harness associated with the onboard computer.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of an unspecified electrical failure in the wiring associated with the

onboard computer and routed under the dashboard. The specific failure could not be conclusively determined based on the evidence examined; however, mechanical damage to the wiring causing a resistive heating condition or wear of the insulation could not be eliminated.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. Visible fire damage was observed to the hood near the windshield. All of the window glass in the vehicle was broken and in the bottom of the doors and floorboards. All remaining sides of the vehicle revealed no fire damage.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred to the middle of the dashboard area. The plastic material in the center of the dashboard had melted and exposed the electrical wiring and other components that are housed within the dashboard area. The electrical wiring was examined and did not display any signs of adverse electrical activity. Further examination of the light switch components, on board vehicle computer, and electrical wiring that transverse behind the dashboard were also examined and revealed no signs of obvious failure.

Engine Compartment Inspection:

The engine compartment was examined. Flame impingement damage was observed throughout the engine compartment with the most severe damage in the compartment located along the rear of the engine closest to the firewall. The plastic and rubber engine components sustained damage but remained intact. The air filter components were oxidized with more severe oxidation along the side closest to the fire wall.

The fuel system was examined and found to be intact with only minor melting to the fuel line hoses. The fuel line was routed along the rear of the engine. The fuel filter was intact and was a GM filter system. The battery for the vehicle was located at the front right side of the engine compartment and had sustained heat damage to the exterior of the battery. Inspection of the battery revealed melting along the top, the electrical conductors were intact but showed signs of melting to the terminal area. Based on the fire patterns within this area, the engine compartment was not the area of origin.

Undercarriage Inspection:

The LLV is mounted on a GM style frame. Examination of the undercarriage revealed only minor distortion to the paint closer to the front indicating heat travel from the engine compartment area or front of vehicle. The frame rail components were undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed one 20 amp fuse was blown which controlled the cigar lighter. Inspection of the cigar lighter revealed nothing was plugged into it at the time of the inspection.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the dashboard area of the vehicle. The specific are of origin was determined to involve the electrical wiring harness associated with the on board computer.

Contributing Factors:

An issue with the electrical harness that was routed too and associated with the on-board vehicle computer. The specific failure involving the wiring harness could not be conclusively determined. However, mechanical damage to the wiring causing an adverse electrical event could not be eliminated.

Evidence Collected:

1. Headlamps switch assembly and associated wiring
2. Vehicle computer and associated wiring
3. 20 amp fuse for cigar lighter

Interviews:

On October 22, 2015, an interview via telephone was conducted with the driver of the vehicle reported the following information:

- He had only used the vehicle on this day.
- On the day of the fire, he experienced the engine shutting off repeatedly throughout the day.

- He would have to shut the engine down and let it cool for a few minutes before it would start again.
- Once the vehicle would not start, he called for a tow truck and left the vehicle on the side of the road with the hazard lights flashing.
- He did not smell any smoke or see any flames at the time he left.
- The vehicle was reported on fire when the tow truck operator arrived to pick it up approximately 45 minutes later.

Laboratory Evidence Examination:

A 20 amp fuse was collected from the fuse panel during the on scene investigation. It was confirmed to be open or blown. The 20 amp fuse was in the slot for the cigar lighter.

The headlamp switch and associated electrical wiring from the dashboard area was collected during the scene investigation and was examined in the lab. The plastic dash area had melted around the switch. The electrical connections on the rear of the switch were intact. The electrical wiring routed too and connected to the switch was intact and its colored plastic insulation was intact and visible. The headlamp switch and its associated electrical wiring were eliminated as a cause of the fire.

The onboard computer and associated electrical wiring was collected during the scene investigation and was examined in the lab. The computer housing was intact and free of fire damage with the exception of some melted plastic adhered to the exterior. The electrical harness associated with the computer sustained severe fire damage. The wiring insulation had been consumed by fire exposing the copper wires. Multiple electrical conductors in the harness had frayed and severed. The fire was determined to have originated in the area where the electrical conductors sustained the most severe damage. The specific failure involving the electrical wiring harness could not be conclusively determined based on the remaining physical evidence.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jonathan K. Sivils

Jonathan K. Sivils, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Manager

Attachments: Photographs, CVs

December 9, 2015
RCG File No. 47701633

Photograph 1

Front right side view of vehicle.



Photograph 2

Front left side view of vehicle.



December 9, 2015
RCG File No. 47701633

Photograph 3

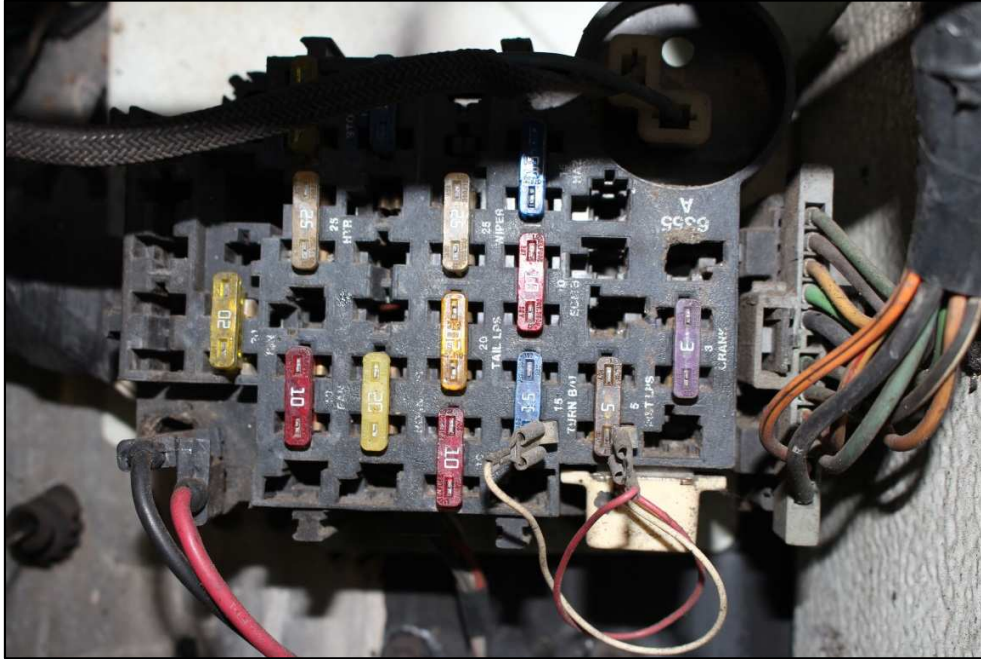
Engine compartment. Notice more severe damage closest to fire wall.

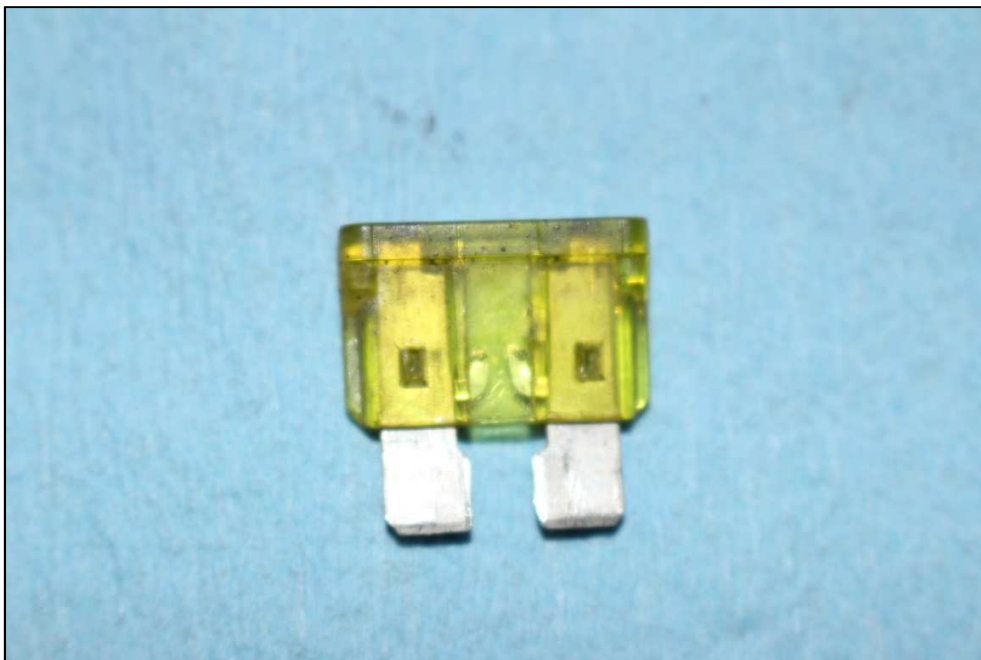


Photograph 4

View of dashboard.







December 9, 2015
RCG File No. 47701633

Photograph 7

Evidence collected #1- Headlamp switch assembly and associated wiring.



Photograph 8

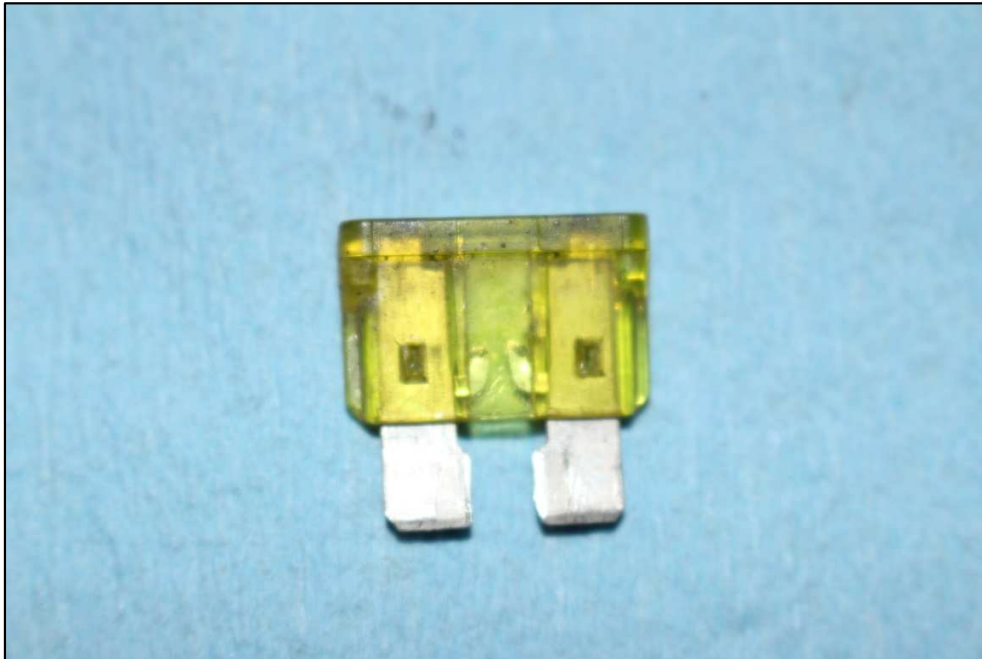
Evidence collected #2- Vehicle computer and associated wiring.



December 9, 2015
RCG File No. 47701633

Photograph 9

Evidence collected #3-20 amp fuse for cigar lighter.



Photograph 10

Frayed and severed electrical wiring from the point of fire origin.



December 9, 2015
RCG File No. 47701633

CVs



Jonathan Sivils, IAAI-CFI, FIT, CFEI Fire Consultant

Mr. Sivils is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, as well as a Fire Investigation Technician (IAAI-FIT) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). He also holds an Associate of Science Degree in Fire Protection Technology. In a career spanning more than 25 years in the fire service, he has investigated and determined the origin and cause of more than 800 fires, to include commercial structures, residential structures, vehicles, marine and heavy equipment. He has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Sivils is a court-qualified expert witness in Criminal and Civil proceedings. Mr. Sivils has extensive training in fire and criminal investigations.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S Fire Protection Technology – Americus University, Washington D.C. – 2002
Bucks County Fire Chiefs and Firefighters Association
Bucks County Fire Marshal Association
International Association of Arson Investigators
National Association of Fire Investigators
National Fire Protection Association
Pennsylvania Association of Arson Investigators

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2012 – 2015	Donan Engineering Company, Inc.
2007 – 2012	Bucks county Fire Marshal Office, Bucks County, Pa
2005 – 2007	U.S. Department Of Defense Fire and Emergency Services
2009 – 2010	NEFCO Fire Investigations, Philadelphia, Pa
2003 – 2005	U.S. Department of Homeland Security
1998 – 2003	U.S. Department Of Defense Fire and Emergency Services
1993 – 2010	Penndel Fire Company, Penndel, Pa



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
9125 Guilford Road, Suite 108
Columbia, Maryland 21046
(877) 872-2999 Telephone
(410) 872-9111 Facsimile

April 6, 2018

Re: RCG File No: 47509695
LLV Number: 1253402
VMF Location: 8403 Lee Highway Merrifield, Virginia
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 1253402, VIN 1GBCS10A8M2922004. The vehicle was examined at the USPS Vehicle Maintenance Facility located at 8403 Lee Highway in Merrifield, Virginia. The fire incident reportedly occurred on Burke Lake Road in Burke, Virginia on March 29, 2018.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on April 2, 2018. Our work to complete this assignment was performed by Fire Consultant Charles W. Feeley, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the steering column of the involved LLV.
2. The specific area of fire origin was determined to be at the horn ring assembly.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of the metallic horn ground contact ring and brass contact button

abrasion particles falling into the plastic electrical wiring connector portion of the horn ring assembly. The metallic particles created a high resistance electrical path between conductors which ignited the plastic connector and horn ring assembly.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. There was no fire, heat or smoke damage to the exterior of the vehicle.

At the time of the inspection, all of the tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the tire, brakes, brake lines, wheels or axles had failed. All doors were observed in working order at the time of the fire.

Interior Inspection:

The rear cargo area sustained no fire, heat or smoke damage. The driver's compartment sustained no fire, heat or smoke damage except to the steering wheel. The steering wheel had been removed prior to the inspection. The interior area of the steering wheel at the turn signal sustained heat damage.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5 L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had an electronic ignition system. There was no damage to the components within the engine compartment. There were no observed leaks from the hoses or reservoirs.

The battery for the vehicle was located at the front right side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be undamaged and intact; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid, and brake fluid were examined and observed to be within their normal operating range.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM general frame and was undamaged. The fuel lines were positioned above the open frame to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

Examination of the fuse panel revealed no visible fire damage to the panel or any of the fuses. The plastic housing of the fuse panel was intact as were all of the fuses and connections. No fuses were open.

Area of Fire Origin:

It was determined, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated within the steering wheel assembly at the turn signal assembly.

Potential Contributing Factors:

The horn button rubbing on the turn signal cam caused friction generating metallic particles/dust which accumulated on the energized electric circuitry at the hazard button. The horn button may have become tilted due to excessive play in the plastic socket thus preventing the button from completely being depressed in the upright position.

Interview:

Mr. was interviewed on April 3, 2018, and provided the following information. He began his shift at approximately 10:00 A.M. While driving on Burke Lake Road, he began to smell smoke. It smelled like a burning wire. The odor stopped and he continued on his route. Approximately thirty minutes later, he began to smell smoke again. He noticed smoke coming from a small hole in the horn assembly on the steering wheel. He drove to the shop. After he arrived, the horn began blowing and he could not stop it. Shop personnel disconnected the battery and the horn stopped blowing.

Evidence Collected:

The interior components of the horn and turn signal assembly were maintained on site and not collected as evidence.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records, it was determined that maintenance work had occurred on the vehicle on two occasions in the area of the steering wheel. On August 14, 2016 the flasher, horn contact and cover had been replaced. On June 26, 2017 the turn signal switch assembly was replaced. The build-up of metallic particles and dust was not noted in the reports.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles W. Feeley

Charles W. Feeley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

April 6, 2018
RCG File No. 47509695

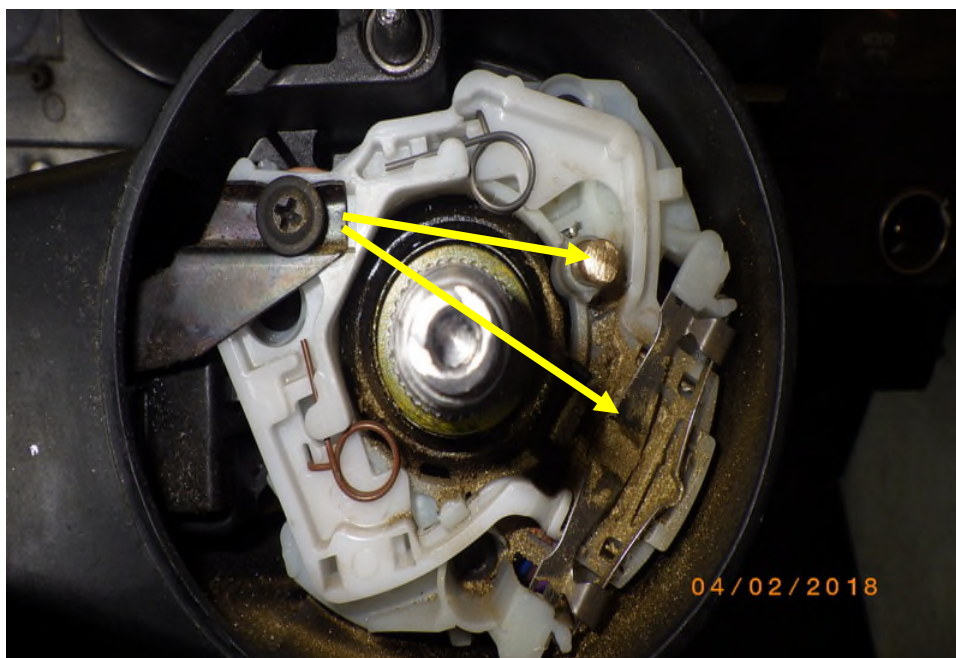
Photograph 1

A view of the exterior front of the vehicle.



Photograph 2

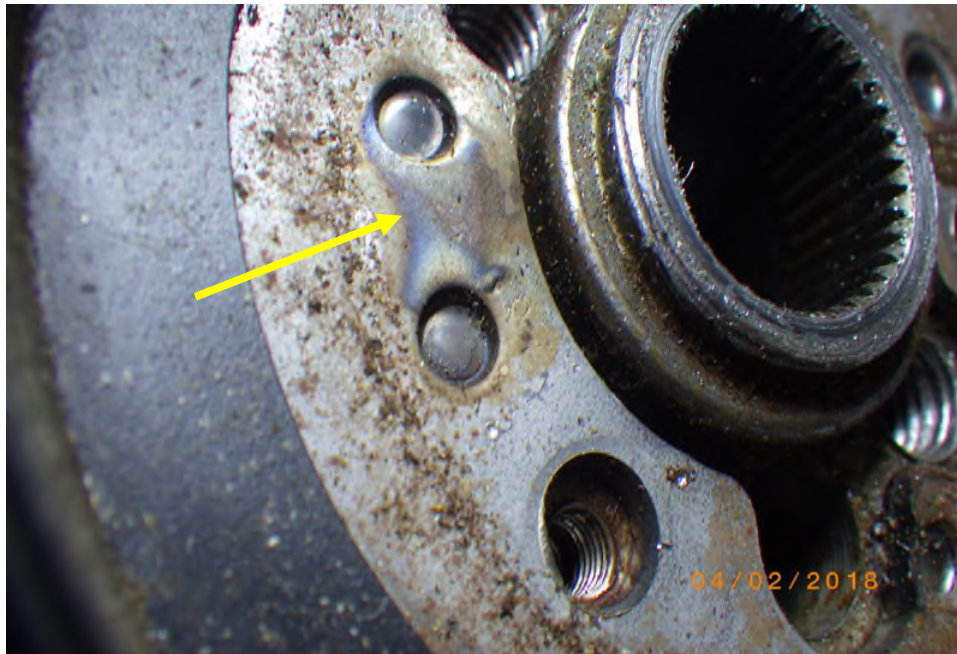
A view of the horn assembly.



April 6, 2018
RCG File No. 47509695

Photograph 3

A view of the retainer ring.



Photograph 4

A view of the horn ring.



April 6, 2018
RCG File No. 47509695

Photograph 5

A view of the horn button.



April 6, 2018
RCG File No. 47509695

CVs



**CHARLES FEELEY, I.A.A.I., C.F.E.I., C.F.I., P. I.
FIRE CONSULTANT**

Mr. Feeley had been employed by the Baltimore City Fire Department for 35 years. In this capacity he had been involved in many different emergency positions including Fire Fighter, Lieutenant, Captain, Chief Safety Officer, Battalion Commander and Division Chief.

Mr. Feeley has completed numerous educational seminars and continuing educational courses.

Mr. Feeley investigated over 550 fires in four years as an investigator and in excess of 5,000 fires as an incident commander at fire scenes. He has given expert testimony in civil and criminal court cases. He supervised the Office of the Fire Marshal in Baltimore City. He also supervised special projects such as the Arson Task Force, juvenile fire setters program, an educational intervention program and public education programs.

At Rimkus Consulting Group, Mr. Feeley has conducted over 500 fire origin and cause determinations that include, but are not limited to, assignments involving residential, commercial, industrial, passenger and commercial vehicles, marine, farm implement/equipment, appliance and electrical equipment related fires.

Mr. Feeley has been recognized for his achievements by being the recipient of awards that include Distinguished Unit Citation, Meritorious Conduct Award, Exemplary Performance, and Distinguished Service Award.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

National Fire Academy
National Nuclear Security Administration
United States Department of Justice, New Mexico Tech.
Department of Homeland Security
National Association of Fire Arson Investigators
United States Department of Justice, Anniston AL.
National Association of Fire Investigators.
Certified Fire and Explosion Investigator, N.A.F.I Certification
Certified Fire Investigator, International Association of Arson Investigators
Licensed as a Private Investigator in the State of Delaware

EMPLOYMENT HISTORY

2006 – Present	Rimkus Consulting Group, Inc.
1970 – 2006	Baltimore City Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road, Suite 224
Atlanta, Georgia 30339
(770) 436-9399 Telephone
(770) 438-2189 Facsimile

April 6, 2018

Re: RCG File No: 50807964
LLV Number: 4314027
VMF Location: 3900 Crown Road SE Atlanta, Georgia
Subject: Preliminary/Final Report

Dear

On March 9, 2018, a fire occurred in a US Postal Service vehicle on Beecher Street in Atlanta, Georgia. On March 28, 2018, we inspected the 1994 GMC LLV 4314027, VIN 1GBCS1044R2920171, at the Atlanta Vehicle Maintenance Facility located at 3900 Crown Road SE in Atlanta, Georgia.

In the course of our work, we inspected the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Gregory M. Cloer, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be along the starter electrical conductor that was located across the top front area of the engine.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a mechanical failure of the alternator mount(s) that caused the starter electrical conductor to come in direct contact with the engine which then led to an adverse electrical event involving the starter electrical conductor. The adverse electrical event ignited nearby combustible materials of the air intake housing.

Observations

Exterior Inspection:

Inspection of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side.

Movement and intensity fire patterns were observed on the front and left front side of the vehicle indicating a fire originating in the engine compartment. The windshield had sustained smoke damage and thermal damage was observed along the bottom left side. There were no other movement and intensity fire patterns observed to the exterior. There was no evidence to indicate that the LLV had recently been involved in a collision.

Interior Inspection:

Inspection of the interior revealed the most severe fire damage had occurred in the dashboard area along the left side of the vehicle in the area of the heater. Movement and intensity fire patterns were observed entering the passenger compartment through the bulkhead in the area of the heater indicating a fire originating in the engine compartment. Smoke damage was observed throughout the remaining areas of the interior.

Engine Compartment Inspection:

The engine compartment was inspected. The vehicle was equipped with a 2.2L engine. The vehicle was also equipped with a fuel injected throttle body and electronic ignition. Some thermal and fire damage was observed in the engine compartment. Most of the combustible materials in the engine compartment were observed mostly intact. The greatest degree of fire damage was observed on top of the engine and in the area of the bulkhead along the left side. Most of the air filter housing that was located along the top of the engine had been consumed during the fire event.

The fuel system was examined and found to be intact and observed with no fire damage. The battery for the vehicle was located at the front right side of the engine

compartment and had sustained thermal damage to the top of the battery. The vehicle fluids were examined and were found to be within their respective operating range.

The electrical conductors were examined and the starter electrical conductor was observed arc-severed along the top of the engine. The remaining electrical conductors in the engine compartment were observed intact and free from fire damage or intact with fire damage. There were no other adverse electrical events observed in the engine compartment. The alternator was observed hanging from its electrical conductors along the left side of the engine. Mechanical damage was observed to the alternator mounts. There was no fire or thermal damage observed to the alternator.

Undercarriage Inspection:

The undercarriage was examined. The involved LLV was mounted on a GM frame. The frame rail components were undamaged. The associated fuel lines and filter system were intact and free of damage. The under carriage was eliminated as the origin of the fire.

Fuse Panel Inspection:

The fuse panel was observed intact. A 15-ampere labeled "Hazards" and a 20-ampere labeled "Ignition" were observed blown. All remaining fuses were observed intact. The fuse panel was eliminated as the origin of the fire.

Area of Fire Origin:

Based on our observations, it was determined that the area of fire origin was in the engine compartment on top of the engine.

Contributing Factors:

A mechanical failure of the alternator mount(s) led to the starter's electrical conductor coming in to direct contact with the engine. The heat from the engine melted the insulation to the starter electrical conductor which resulted in the starter electrical conductor to become grounded to the engine that led to an adverse electrical event.

Evidence Collected:

No evidence was collected.

Service Records:

A review of the service records was conducted. No recent work provided was determined to have caused or contributed to the cause of the fire.

Interview:

We were unable to conduct an interview with the mail carrier. On March 29, 2018, a call was placed to the West End Post Office and there was no answer.

On March 29, 2018, an email was sent to the Post Office Contact, requesting her to have the mail carrier to call for an interview. The email was sent with a delivery and read receipt. An email receipt was received on March 29, 2018, indicating the email was delivered. On March 30, 2018, an email receipt was received indicating the email was read.

On April 2, 2018, a follow up email was sent to the Post Office Contact, Ms., requesting her to have Mr., call for an interview. The email was sent with a delivery and read receipt. An email receipt was received on April 2, 2018, indicating the email was delivered. On April 2, 2018, an email receipt was received indicating the email was read.

Ms. has not responded to the emails that were sent to her on March 29, 2018, and on April 2, 2018.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

April 6, 2018
RCG File No. 50807964

Photograph 1

View of the exterior fire patterns.



Photograph 2

View of the interior fire damage along the left side of the bulkhead.



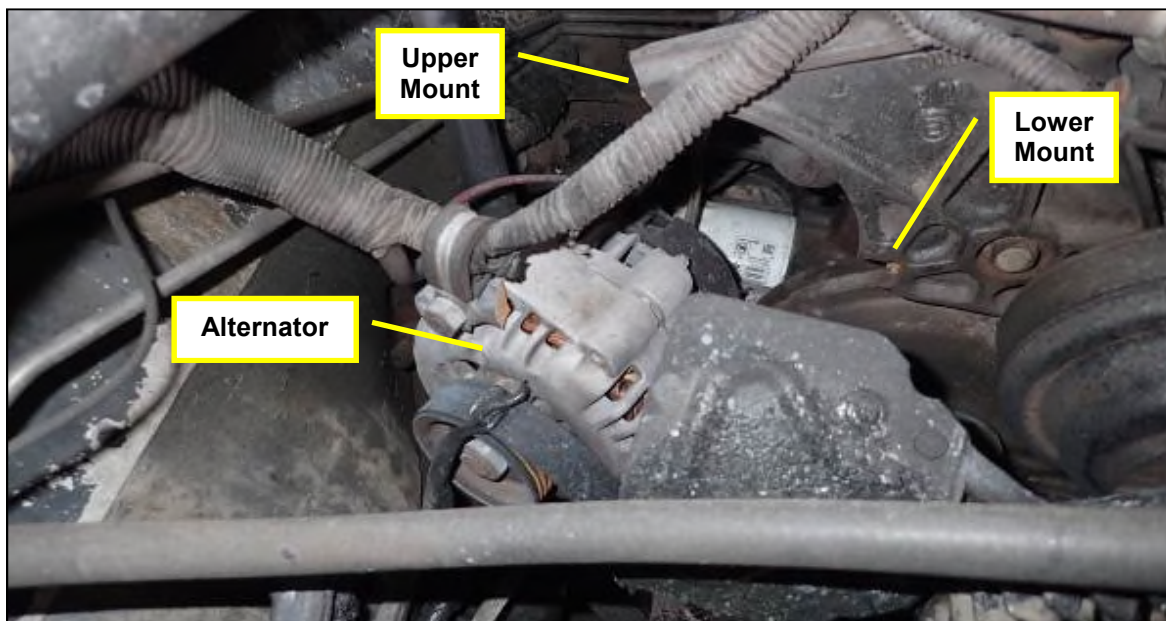
Photograph 3

View of the engine compartment.



Photograph 4

View of the alternator and alternator mounts.



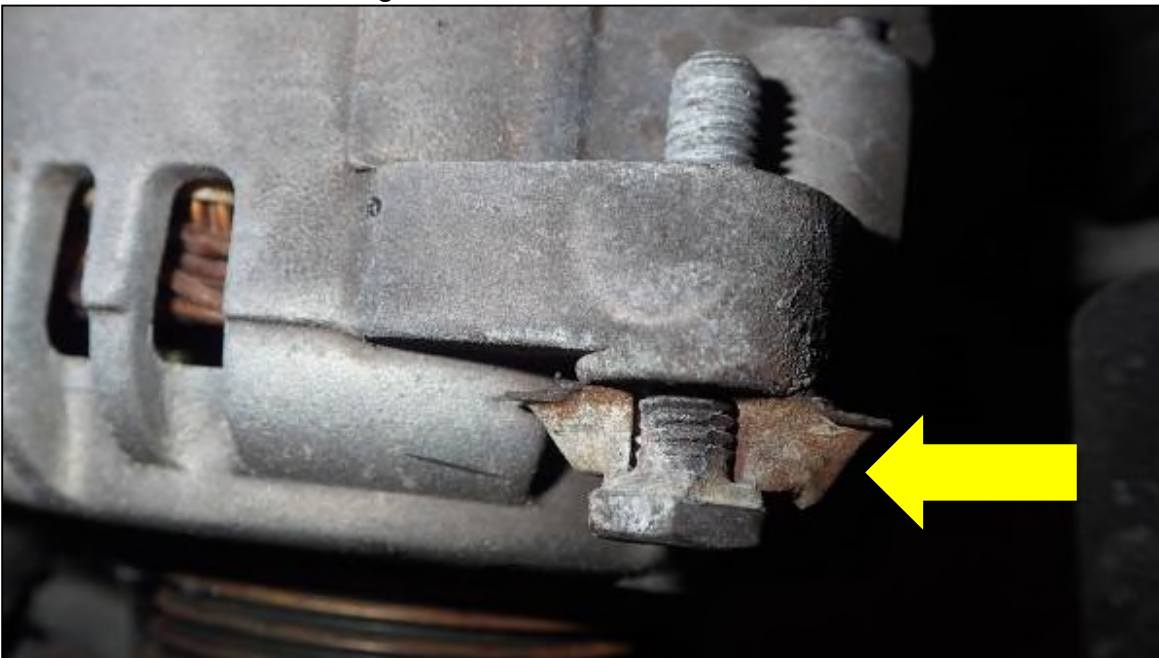
Photograph 5

View of the mechanical damage to the upper alternator mount on the alternator.



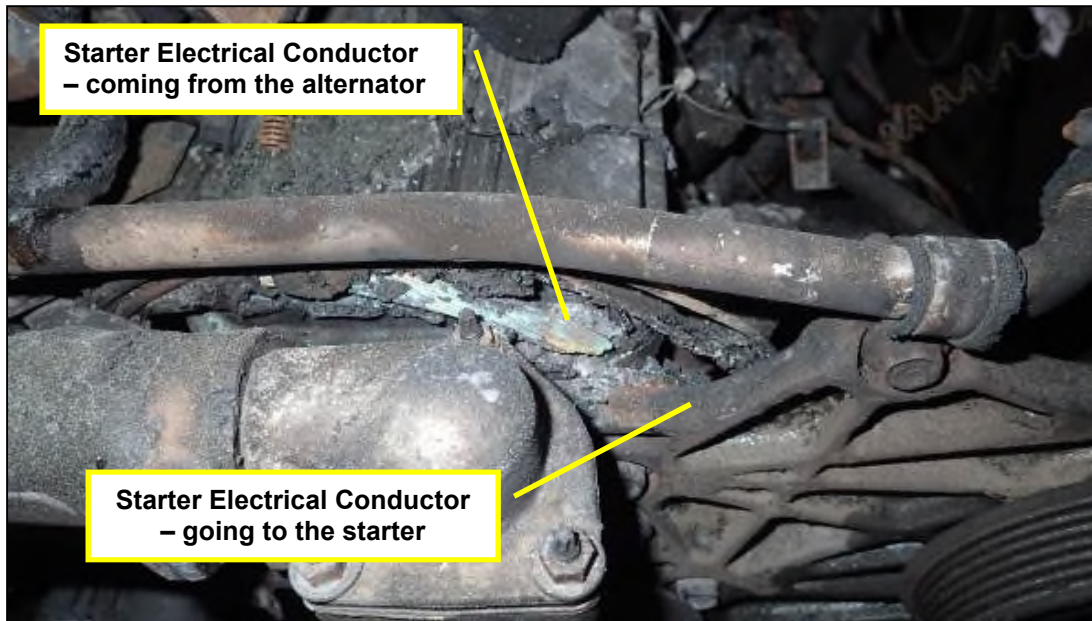
Photograph 6

View of the mechanical damage to the lower alternator mount on the alternator.



Photograph 7

View of the arc-severed starter electrical conductor along the top of the engine.



April 6, 2018
RCG File No. 50807964

CVs



**GREGORY M. CLOER, C.F.I.
FIRE CONSULTANT**

Mr. Cloer is a Certified Fire Investigator (C.F.I.) by Georgia P.O.S.T., NPQ, N.F.A. and IAAI for fire/arson investigation, and is certified by Georgia P.O.S.T. as a basic peace officer. Mr. Cloer has also served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting & prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator. Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. Mr. Cloer has testified as an expert in criminal court related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certification, P.O.S.T. Basic and Advanced Arson Investigation (Currently Fire Investigator I and II)
Certification, P.O.S.T. Basic Peace Officer
N.F.A. Fire/Arson Investigation
P.O.S.T. Arson Investigator
IAAI-CFI
NPQ Certified Fire Investigator
NPQ Fire Instructor

TRAINING/CERTIFICATES

Certified Fire Investigator • Fire Instructor • Peace Officer • EMT • Paramedic • Advanced Fire Investigator • Advanced Fire Cause & Origin Expert Witness

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1986 – 2015	Cobb County Fire and Emergency Services

DETAILED PROFESSIONAL EXPERIENCE:

RIMKUS CONSULTING GROUP, INC.

2015 - PRESENT

Fire Consultant

Conduct fire, arson, and explosive investigations including residential, commercial, and vehicular losses for clients. Collect and preserve evidence ensuring a precise chain of custody. Conduct interviews with victims, property owners, witnesses, investigators, and pertinent third party organizations. Photograph scenes and prepare detailed written investigative reports as to the conclusions and opinions of the subject loss. Testify in related depositions and trials.



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
10200 Forest Green Boulevard
Suite 112
Louisville, KY 40223
(888) 235-7423 Telephone
(615) 883-4118 Facsimile

April 14, 2017

Re: RCG File No:

	58501392
LLV Number:	0215471
VMF Location:	1420 Gardiner Lane in Louisville, Kentucky
Subject:	Preliminary/Final Report

Dear

On March 19, 2017, a fire occurred in a US Postal Service vehicle at 5315 Dixie Highway in Louisville, Kentucky. On March 24, 2017 Rimkus Consulting Group, Inc. was retained to examine the 1990 Grumman LLV 0215471, VIN 1GBC510A1M2914956. On March 28, 2017, we conducted a fire origin and cause examination on the vehicle at 1420 Gardiner Lane in Louisville, Kentucky.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records, and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Kevin Dunn, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was at and around the exhaust manifold where oil was sprayed on the exhaust when an engine rod penetrated through the engine block.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a thrown rod through the engine block which allowed ignitable engine fluids to be expelled onto the hot surface of the operating LLV and ignite.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed in the engine compartment and the mail compartment. Total mass loss was observed to the windshield, engine hood assembly, dash board and multiple engine components. There was no evidence to indicate that the LLV had recently been involved in a collision. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Fire patterns were consistent with the fire having originated within the engine compartment and having extended into the mail compartment. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. The front left tire was fire-damaged and had lost inflation. The remaining tires were still holding inflation and did not exhibit evidence of fire damage.

Interior Inspection:

We observed significant direct fire damage within the mail compartment. The dashboard, driver seat, and mail carrier tray had been consumed by the fire. The fire extended from the mail compartment into the cargo area. We observed that the ignition key was present in the ignition switch and the key appeared to be in the "on" position.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine. Severe fire damage was observed throughout the engine compartment. The air filter cover and filter were examined and observed with severe fire damage. Electrical wires that transverse the area were damaged by fire and were observed thermally damaged, thus eliminating them as a cause. The fuel system was examined and found to be intact, however, observed with severe fire damage. The fuel filter was observed with severe fire damage, however, was observed intact and located along rear of the engine near the fire wall. The fuel system was the GM model.

The battery for the vehicle was located at the front right side of the engine compartment and had severe fire damage to the entire battery. The battery, the battery terminals and battery cables were examined and found to be damaged by thermal damage only, no

adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid, and brake fluid were examined and observed to be within their normal operating range; however, water did appear to be in the fluids. The carburetor was examined and observed with fire damage to the top portion of the carburetor where the air filter housing was mounted.

An examination of the engine block was conducted. A large hole was observed on the left side of the engine block directly behind the exhaust manifold. The hole was parallel with the engine crank shaft and appeared to have been blown from the inside out by a piston rod failure. A large quantity of oil was observed on the back side of the exhaust manifold. Based on the fire patterns observed, the left side of the engine within the engine compartment was determined to be the area of origin. The vehicle was not equipped with a High Energy Ignition (HEI) distributor.

Undercarriage Inspection:

Examination of the undercarriage revealed severe fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. We observed direct fire damage beneath the left side of the engine compartment. The rubber components of the fuel lines, which extended along the frame on the left side of the vehicle, had been consumed by the fire. The oil pan drain plug and oil filter were both present and did not exhibit evidence of having leaked. We observed the presence of engine oil on multiple components of the undercarriage at the left side of the engine compartment. This condition most probably resulted when the fractured connecting rod pierced the engine block, permitting the engine oil to escape.

Fuse Panel Inspection:

Examination of the fuse panel revealed severe fire damage to the panel and all of the fuses, due to the severe fire damage we were not able to determine if any were fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment on the left side of the engine at the exhaust system.

Contributing Factors:

The LLV reportedly was being driven at the time of the fire, the carrier stated the vehicle had no power and was running rough. The vehicle was pulled into a service facility. The carrier observed smoke and fire on the left side of the engine in the area of the exhaust manifold.

A large hole was observed on the left side of the engine block directly behind the exhaust manifold. The hole was parallel with the engine crank shaft and appeared to have been blown from the inside out by a piston rod failure. A large quantity of oil was observed on the back side of the exhaust manifold.

The evidence observed is consistent with a catastrophic failure of the engine. The most probable cause for the fire was the ignition of leaking engine oil vapor by a competent ignition source. The competent ignition sources in the area of origin would have been the hot surfaces of an engine component. The engine oil vapor would have escaped when the fractured connecting rod pierced through the left side of the engine block. A fractured connecting rod is most commonly caused by inadequate lubrication or over revving of the engine. However, there are numerous other causes that may create or contribute to this condition.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

We have attempted to interview the mail carrier but have been unsuccessful in making contact with the Manager of Customer Services at the U.S. Post Office where he is employed.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NORTH CAROLINA, PLLC

Kevin Dunn

Kevin Dunn, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

April 14, 2017
RCG File No. 58501392

Photograph 1

Overview of the front of the vehicle.



Photograph 2

Overview of the right side of the vehicle.



April 14, 2017
RCG File No. 58501392

Photograph 3

Overview of the left side of the vehicle.



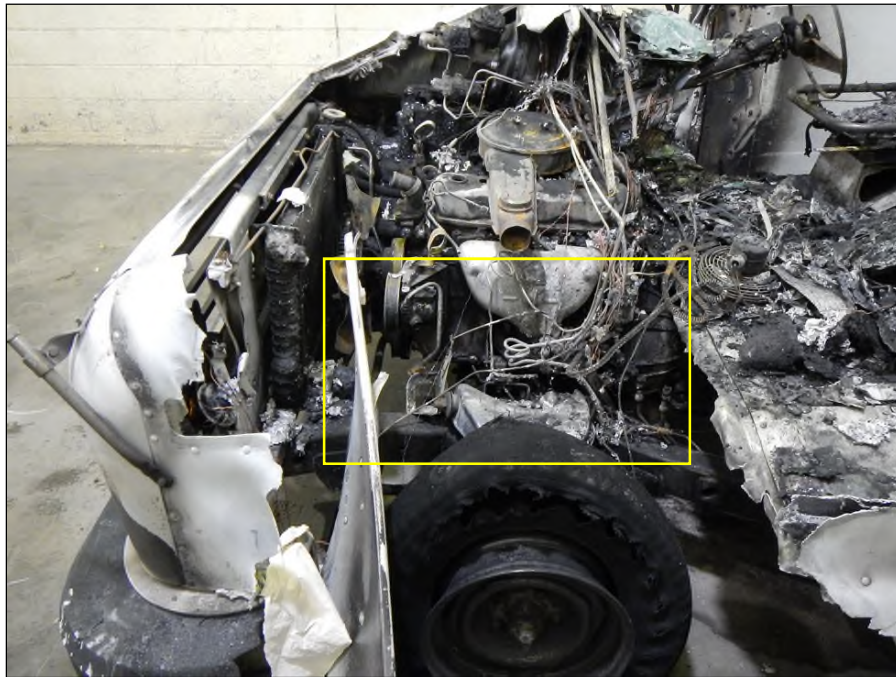
Photograph 4

Overview of the rear of the vehicle.



Photograph 5

Overview of the engine compartment and area of fire origin.



Photograph 6

Overview of the fractured connecting rod.



April 14, 2017
RCG File No. 58501392

Photograph 7

Overview of the pierced engine block.



April 14, 2017
RCG File No. 58501392

CVs



**KEVIN DUNN, C.F.I., C.F.E.I., C.V.F.I.
FIRE CONSULTANT**

Mr. Dunn is a Certified Fire Investigator (CFI) through the International Association of Arson Investigators. He is also a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) through the National Association of Fire Investigators. He has also completed the Fire/Arson Investigation course at the National Fire Academy located in Emmitsburg, MD.

Mr. Dunn retired after a 20-year career with the Kentucky State Police. Nineteen of which was his assignment as an Arson Investigator at the Frankfort Post. He was responsible for conducting fire and arson investigations in the central Kentucky area, as well as anywhere within the state that his experience and specialized training was needed. His professional experience includes residential, commercial, and vehicle fire origin and cause investigations. He has specialized training in fatal fire investigation, interviewing techniques, wildland fire investigation, and crime scene processing.

Mr. Dunn was also a Kentucky certified law enforcement instructor and has experience conducting both classroom and live fire training.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator (CFI) – International Association of Arson Investigators, Inc.
Certified Fire and Explosion Investigator (CFEI) – National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) – National Association of Fire Investigators
Certified Law Enforcement Officer (Retired) – Commonwealth of Kentucky
Certified Law Enforcement Instructor (Retired) – Commonwealth of Kentucky
Certified as a Fire Investigator by the State of Indiana
Certified as a Fire Investigator by the State of West Virginia
Licensed Private Investigator in the State of Kentucky (#0836)
Licensed Private Investigator in the State of Ohio (#201311236805)
Licensed Private Investigator in the State of Tennessee (#7816)
Member of the International Association of Arson Investigators (IAAI)
Member of the International Association of Arson Investigators Kentucky Chapter
Member of the National Association of Fire Investigators (NAFI)

EMPLOYMENT HISTORY

2013 – Present	Rimkus Consulting Group, Inc.
1993 – 2013	Kentucky State Police
1991 – 1993	Hazard, KY Police Department
1990 – 1993	Hazard, KY Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1313 East Jasmine, Suite C
McAllen, TX 78501
(866) 500-9848 Telephone
(956) 683-0157 Facsimile

Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2017

September 20, 2017

Re: RCG File No:

LLV Number: 01508082
VMF Location: 1256944
Subject: 620 E. Pecan Blvd. in McAllen, Texas
Preliminary/Final Report

Dear

Rimkus Consulting Group, INC. was retained to examine LLV 1256944, VIN 1GBCS10A6M2925774. The vehicle was examined at the USPS McAllen VMF located at 620 East Pecan Blvd. in McAllen, Texas. The fire incident reportedly occurred at 21201 Hatchett Road in Harlingen, Texas on July 26, 2017.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on August 03, 2017. Our work to complete this assignment was performed by Fire Consultant Wesley D. Bradley, IAAI-CFI. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin within the engine compartment was determined to be in the engine compartment at the carburetor.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of numerous attempts to start the vehicle, which caused the carburetor and air filter to become saturated in fuel. A backfire through the carburetor occurred, thus igniting fuel vapors in the air filter.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a systematic clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Extensive fire, heat, and smoke damages were visible to the entire front engine compartment and front mail/cargo areas. All remaining sides of the vehicle sustained no fire damage.

Interior Inspection:

Examination of the interior of the vehicle revealed extensive fire, heat and smoke damage localized to the front driver/operator area which decreased rapidly in severity as the fire progressed towards the rear of the vehicle.

Engine Compartment Inspection:

The engine compartment was examined. Fire damage was observed along the rear of the engine at the air filter and carburetor. The air filter cover and filter were in place at the time of the fire and remained intact and in post fire conditions until the time of our inspection. The engine compartment was documented thoroughly and the air cleaner housing was non-destructively disassembled for inspection and documentation. Remains of the air filter were limited to partial remnants of the wire/metal mesh; paper filter materials were not located.

Electrical wires that transverse the area surrounding the air filter and carburetor were thermally damaged by fire exposure, and were not a primary factor in the fires ignition or cause. The fuel system was examined and fire movement and intensity patterns revealed partial consumption and loss of mass to the lightweight alloy metal carburetor body. Directional fire patterns indicate the fire burned from within the carburetor and air cleaner housing and began to distort and collapse inward during the fire. The fuel filter was significantly damaged by direct flame impingement with partial degradation of the fuel line systems. The fuel system was the GM model.

The battery for the vehicle was partially consumed during the fire. The battery and immediate supply distribution components were located and the remaining electrical conductors that were examined had no observable adverse electrical activity. The air filter and carburetor assemblies were further examined and observed with fire damages

to the top and interior portion of the carburetor where the air filter housing was mounted. Based on the fire patterns observed, the engine carburetor within the engine compartment was determined to be the area of origin.

Undercarriage Inspection:

Examination of the undercarriage revealed minimal fire, heat, and smoke damage due to fire exposure. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

The fuse panel was severely damaged by fire exposure and could not be examined for conclusive fuse conditions.

Area of Fire Origin:

Based on the observed fire movement and intensity patterns, and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated in the engine compartment and within the carburetor/air cleaner housing assemblies.

Contributing Factors:

The LLV reportedly stalled while being operated and the carrier could not get it re-started after numerous attempts. The carrier continued to "crank" the vehicle and pump the accelerator. This caused the carburetor and air filter to become saturated in fuel. A backfire through the carburetor occurred, thus igniting fuel vapors in the air filter.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

On August 3, 2017, an interview was conducted with USPS-VMF Supervisor at the McAllen Texas office, Mr. provided the carriers statement and directed access to the loss unit.

- Mr. stated the starter system program caused double spark/double fuel delivery during cranking failures:
- Mr. stated that it was common that the LLV unit stalled after the latest replacement of engine system packages and they had issues getting it to start sometimes.

- Mr. said the carrier reported that they attempted to start the vehicle by cranking the motor multiple times. While cranking the motor, the vehicle attempted to start and then a pop sound was heard coming from the engine and subsequent fire occurred.
- Mr. stated that the operator then notified 911.
- Mr. stated that they have had several mechanical issues with this vehicle package system and that this was not the first time that this type of incident had occurred with this type of vehicle system.

Service Records:

After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Wesley D. Bradley

Wesley D. Bradley, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

September 20, 2017
RCG File No. 01508082

Photograph 1

General view of loss unit (from front facing the rear).



Photograph 2

A view of the interior of the vehicle, observe the progression of the burn patterns from the engine compartment.



Photograph 3

View of air filter remains and air cleaner housing.



Photograph 4

A view of the area of fire origin at and within the carburetor/air cleaner assemblies.



September 20, 2017
RCG File No. 01508082

Photograph 5
Engine Compartment.



Photograph 6
Top area of the engine and the carburetor/air filter.



September 20, 2017
RCG File No. 01508082

CVs



**WESLEY D. BRADLEY, IAAI-CFI, TX-PI, AR-RPI
FIRE CONSULTANT**

Mr. Bradley is a Bi-lingual (Spanish/English) Certified Fire Investigator (CFI) by the International Association of Arson Investigators and a Certified Fire and Explosion Investigator by the International Fire Service Accreditation Congress. Mr. Bradley holds two Associates of Applied Science Degrees in Fire Science from Weatherford College in Dallas, Texas, and has 15+ years of experience in the fire service and law enforcement field. Mr. Bradley began his career as a professional firefighter in Mission, Texas. Through the years, he has served in various capacities, including Asst. Fire Chief, Chief Deputy Fire Marshal, Commander, Fire Inspector and Firefighter. He has worked for various law enforcement and fire departments, including the Hidalgo County Fire Marshal's Office where he was successful in conducting several hundred fire investigations with local, state, and federal agencies. His experience includes all facets of Fire Origin and Cause Investigations, Private Investigations, Criminal Investigations, Basic Vehicular Accident Reconstruction and Investigations, Live Fire Training, Accelerant Detection K-9 Handling, Training and Operations, Hazardous Materials Operations and Structural Collapse Operations. Mr. Bradley holds active licenses with the International Fire Service Accreditation Congress and National Registry of Emergency Medical Technicians in Texas and Arkansas as an Advanced- Firefighter, Fire/Arson Investigator, Fire Inspector, Fire Instructor, Texas Peace Officer, Emergency Medical Technician and Accelerant K-9 Handler.

Mr. Bradley provides extensive experience in the fire service, law enforcement and Accelerant K-9 Detection with his K-9 partner "KODI." Mr. Bradley's education provides a wealth of knowledge as a public safety professional and professional consultant. As a fire investigator, Mr. Bradley's expertise includes determining the origin and cause of fires and explosions in residential, commercial, vehicles, marine, outdoor land areas, and the use of accelerant detection K-9s. In addition, he has professional and responsible evidence collection, storage, and chain of custody and documentation capabilities for all types of loss incidents. Mr. Bradley has experience in all levels of investigational procedures and has numerous successful convictions in fire and property crimes. Through his career, Mr. Bradley has experience and expertise with fire fatality scenes and developed positive working relationships with all ranks of the Public and Private Authorities.

EDUCATION AND CERTIFICATIONS

A.A.S., Fire Chemistry (Emphasis in Fire Origin and Cause) Weatherford College (Dallas, Texas)
A.A.S., Fire Science (Emphasis in Protection / Legal Aspects) Weatherford College (Dallas, Texas)
Phi Theta Kappa Honor Society- Weatherford College (Dallas, Texas)
IAAI-CFI (Certified Fire Investigator), International Association of Arson Investigators
National Board on Fire Service Professional Qualifications-Certified Fire Investigator
Accelerant Detection K-9 Handler
Bi-Lingual (Spanish/English)
Private Investigator, State of Texas
Registrant Private Investigator, State of Arkansas
Currently pursuing a B.S. Electrical Engineering, University Of Texas-RGV (70+ Hours Completed)
Certificate Pre-Bachelors, Legal Reasoning, University Of Texas-RGV (Certificate)
National Society of Collegiate Scholars- Honors, University of Texas-RGV (Edinburg, Texas)
Gold Key Society- Honors (Top 15% Graduate Class), University of Texas-RGV (Edinburg, Texas)
Directed Electronics, Certificate in 12v Electronic Systems
Municipal, State, and Federal Court Testimony and Deposition (Professional-Expert Witness)
IFSAC (Firefighter I & II, Fire / Arson Investigator, Fire Inspector I & II, Plan Reviewer)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1313 East Jasmine, Suite C
McAllen, TX 78501
(866) 500-9848 Telephone
(956) 683-0157 Facsimile

Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2017

September 20, 2017

Re: RCG File No:

LLV Number:	01508083
VMF Location:	1263108
Subject:	809 Nueces Bay Blvd. in Corpus Christi, Texas
	Preliminary/Final Report

Dear

Rimkus Consulting Group, INC. was retained to examine LLV 1263108, VIN 1GBCS10A9N2901146. The vehicle was examined at the USPS Corpus Christi VMF located at 809 Nueces Bay Blvd. in Corpus Christi, Texas. The fire incident reportedly occurred on the 100th Block of South Main Street in Hallettsville, Texas on July 21, 2017.

We completed the vehicle inspection on August 4, 2017, during that time we examined and documented the fire damaged vehicle and interviewed witnesses. Our work to complete this assignment was performed by Fire Consultant Wesley D. Bradley, IAAI-CFI. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin within the engine compartment was determined to be at the carburetor.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of numerous attempts to start the vehicle, which caused the carburetor and air filter to become saturated in fuel. A backfire through the carburetor occurred, thus igniting fuel vapors in the air filter.

Observations

Exterior Inspection:

Examination of the vehicle began at the front hood area and continued in a systematic clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Minimal fire, heat, and smoke damages were localized and confined to the front engine compartment and hood/cowl areas. All remaining sides of the vehicle sustained no visible fire, heat, or smoke damages.

Interior Inspection:

Examination of the interior of the vehicle passenger compartment revealed no fire, heat, or smoke damages. The fire was confined to the interior of the engine compartment with no visible fire exposure inward past the bulkhead/firewall.

Engine Compartment Inspection:

The engine compartment was examined. Fire damage was observed along the rear of the engine at the air filter and carburetor. The air filter cover and filter were in place at the time of the fire and remained intact and in post fire conditions until the time of our inspection. The engine compartment was documented thoroughly and the air cleaner housing was disassembled for inspection and documentation. Remains of the air filter were limited to partial remnants of the wire/metal mesh and paper filter materials.

Electrical wires that transverse the area surrounding the air filter and carburetor were minimally damaged due to thermal fire exposure, and were not a primary factor in the fires ignition or cause. The fuel system was examined and fire movement and intensity patterns revealed partial deformation to the lightweight alloy metal carburetor body. Directional fire patterns indicate the fire burned from within the carburetor and air cleaner housing and began to consume the intrinsic components inward during the fire.

The fuel filter was not visibly damaged, and the fuel lines and fuel systems were intact and undisturbed. The fuel system was the GM model. The battery for the vehicle was not damaged during the fire. The battery and immediate supply distribution components were located and the electrical conductors and components had no observable adverse electrical activity. The air filter and carburetor assemblies were further examined and

observed with fire damage to the top and interior portion of the carburetor where the air filter housing was mounted. Based on the fire patterns observed, the engine carburetor within the engine compartment was determined to be the area of origin.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire, heat, or smoke damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

The fuse panel was not damaged by fire and all fuses were in place and intact.

Area of Fire Origin:

Based on the observed fire movement and intensity patterns, and a systematic evaluation of the remaining physical evidence it was determined that the fire originated in the engine compartment at and within the carburetor/air cleaner housing assemblies.

Contributing Factors:

The LLV reportedly stalled and “sputtered” while being operated. The carrier made multiple attempts to regain power and engine control. The carrier continued to “crank” the starter and pump the accelerator. This caused the carburetor and air filter to become saturated in fuel. A backfire through the carburetor occurred, thus igniting fuel vapors in the air filter.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

On August 4, 2017, an interview was conducted with USPS-VMF Supervisor at the Corpus Christi, Texas unit.

- Mr. stated the starter system program causes double spark/double fuel delivery during cranking failures.
- Mr. advised that he communicated with the McAllen VMF on their similar incident, and further confirmed that it is common that the LLV unit stalls after the latest replacement of engine system packages and they have issues to get started sometimes.

- Mr. stated that the carrier reported that the LLV began to sputter and backfire, then during attempts to regain power and control the vehicle began to smell of a very strong odor of fuel, subsequently catching on fire under the hood.
- Mr. stated that the carrier then notified 911.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records, it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. However, based on this information, maintenance performed on the vehicle may not have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Wesley D. Bradley

Wesley D. Bradley, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

September 20, 2017
RCG File No. 01508083

Photograph 1

General view of loss unit.



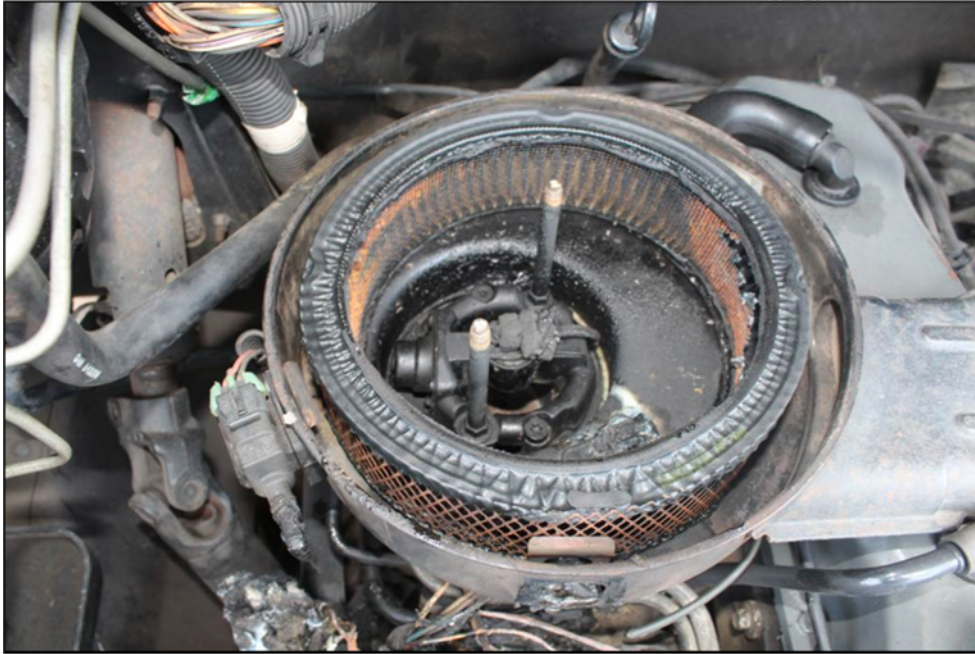
Photograph 2

Interior view of passenger/operator compartment (no visible fire exposure inward).



Photograph 3

General view of the area of fire origin.



Photograph 4

Detailed view of area of origin components (air filter and filter cover).



September 20, 2017
RCG File No. 01508083

Photograph 5

Front/engine compartment area.



Photograph 6

Engine compartment.



September 20, 2017
RCG File No. 01508083

CVs



**WESLEY D. BRADLEY, IAAI-CFI, TX-PI, AR-RPI
FIRE CONSULTANT**

Mr. Bradley is a Bi-lingual (Spanish/English) Certified Fire Investigator (CFI) by the International Association of Arson Investigators and a Certified Fire and Explosion Investigator by the International Fire Service Accreditation Congress. Mr. Bradley holds two Associates of Applied Science Degrees in Fire Science from Weatherford College in Dallas, Texas, and has 15+ years of experience in the fire service and law enforcement field. Mr. Bradley began his career as a professional firefighter in Mission, Texas. Through the years, he has served in various capacities, including Asst. Fire Chief, Chief Deputy Fire Marshal, Commander, Fire Inspector and Firefighter. He has worked for various law enforcement and fire departments, including the Hidalgo County Fire Marshal's Office where he was successful in conducting several hundred fire investigations with local, state, and federal agencies. His experience includes all facets of Fire Origin and Cause Investigations, Private Investigations, Criminal Investigations, Basic Vehicular Accident Reconstruction and Investigations, Live Fire Training, Accelerant Detection K-9 Handling, Training and Operations, Hazardous Materials Operations and Structural Collapse Operations. Mr. Bradley holds active licenses with the International Fire Service Accreditation Congress and National Registry of Emergency Medical Technicians in Texas and Arkansas as an Advanced- Firefighter, Fire/Arson Investigator, Fire Inspector, Fire Instructor, Texas Peace Officer, Emergency Medical Technician and Accelerant K-9 Handler.

Mr. Bradley provides extensive experience in the fire service, law enforcement and Accelerant K-9 Detection with his K-9 partner "KODI." Mr. Bradley's education provides a wealth of knowledge as a public safety professional and professional consultant. As a fire investigator, Mr. Bradley's expertise includes determining the origin and cause of fires and explosions in residential, commercial, vehicles, marine, outdoor land areas, and the use of accelerant detection K-9s. In addition, he has professional and responsible evidence collection, storage, and chain of custody and documentation capabilities for all types of loss incidents. Mr. Bradley has experience in all levels of investigational procedures and has numerous successful convictions in fire and property crimes. Through his career, Mr. Bradley has experience and expertise with fire fatality scenes and developed positive working relationships with all ranks of the Public and Private Authorities.

EDUCATION AND CERTIFICATIONS

A.A.S., Fire Chemistry (Emphasis in Fire Origin and Cause) Weatherford College (Dallas, Texas)
A.A.S., Fire Science (Emphasis in Protection / Legal Aspects) Weatherford College (Dallas, Texas)
Phi Theta Kappa Honor Society- Weatherford College (Dallas, Texas)
IAAI-CFI (Certified Fire Investigator), International Association of Arson Investigators
National Board on Fire Service Professional Qualifications-Certified Fire Investigator
Accelerant Detection K-9 Handler
Bi-Lingual (Spanish/English)
Private Investigator, State of Texas
Registrant Private Investigator, State of Arkansas
Currently pursuing a B.S. Electrical Engineering, University Of Texas-RGV (70+ Hours Completed)
Certificate Pre-Bachelors, Legal Reasoning, University Of Texas-RGV (Certificate)
National Society of Collegiate Scholars- Honors, University of Texas-RGV (Edinburg, Texas)
Gold Key Society- Honors (Top 15% Graduate Class), University of Texas-RGV (Edinburg, Texas)
Directed Electronics, Certificate in 12v Electronic Systems
Municipal, State, and Federal Court Testimony and Deposition (Professional-Expert Witness)
IFSAC (Firefighter I & II, Fire / Arson Investigator, Fire Inspector I & II, Plan Reviewer)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road, Suite 224
Atlanta, GA 30339
(770) 436-9399 Telephone
(770) 438-2189 Facsimile

April 17, 2017

Re: RCG File No:

	50806792
LLV Number:	2202647
VMF Location:	3900 Crown Road in Atlanta, Georgia
Subject:	Preliminary/Final Report

Dear

On March 25, 2017, a fire occurred in a US Postal Service vehicle at 3421 West Stewart Mill Road in Douglasville, Georgia. On March 30, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1992 Grumman LLV 2202647 with a vehicle identification number (VIN) of 1GBCS10A5N2910250. On April 4, 2017, we conducted a fire origin and cause examination on the vehicle at a US Postal Service Maintenance Facility located at 3900 Crown Road in Atlanta, Georgia.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records, and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Van D. Tuley, IAAI-CFI. A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the vehicle.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of an engine fluid leak (oil or transmission fluid) onto a hot engine surface as the possible cause of the fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the rear exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed to the rear aluminum rollup door. The bottom three panels of the door were intact but fire damaged. The top three panels of the door had melted. The left side tail light assembly had melted. Severe fire damage was observed to the left side of the vehicle. The mail side door was severely fire damaged, with a portion of the aluminum frame having melted. Severe fire damage was also observed to the top of the door and the top portion of the cargo area. The front of the vehicle had sustained severe fire damage. The cover for the engine compartment had been consumed by the fire. The bulkhead between the engine compartment and the passenger compartment was also missing. The front aluminum bumper had melted in the center of the bumper assembly. Severe fire damage was observed throughout the engine compartment.

Severe fire damage was also observed to the right side of the vehicle. Severe heat damage was observed to the upper portion of the cargo area. Severe fire damage was observed to the driver's door and the front portion of the door frame was missing. The front fenders were also missing. The entire aluminum top of the vehicle had melted as the result of thermal exposure from the fire. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage throughout. All combustible seating material had been consumed, exposing the metal seat frames. The steering column and brake pedal assembly had been severely fire damaged. The aluminum side walls to the cargo area were severely fire damaged and the majority of the aluminum inner side walls were consumed by the fire.

Engine Compartment Inspection:

Examination of the engine compartment revealed severe fire damage throughout the compartment. The vehicle was equipped with a GM 2.5L, 4-cylinder gasoline engine. All combustible material (hoses, belts, electrical wiring insulation) had been consumed in the fire. Severe fire damage was observed to the distributor, ignition coil, and the alternator. Only the bases of the distributor and alternator remained attached to the engine. A considerable amount of oil was observed on the right side of the engine. The oil dipstick was still present and when examined, it showed that the oil level was above the maximum level by approximately one-half inch. Examination of the remaining electrical wiring revealed severe fire damage to the wiring. No indications of adverse electrical activity were observed on the wiring. The battery cables were also severely fire damaged. No remains of the battery were found in the engine compartment. The most severe fire damage had occurred on the right side of the engine compartment.

Undercarriage Inspection:

Examination of the undercarriage revealed severe fire damage in the area of the engine compartment. No fire damage was observed to the rear areas of the undercarriage. The exhaust system was intact and the transmission did not reveal any leaks or failures.

Fuse Panel Inspection:

The fuse panel had been destroyed by the fire and could not be examined.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment of the vehicle. The specific area of origin could not be conclusively identified due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine

compartment and the lack of remaining physical evidence for examination. We could not eliminate the possibility of an engine fluid leak (oil or transmission fluid) onto a hot engine surface as the possible cause of the fire.

Evidence Collected:

No evidence was collected.

Interviews:

On April 5, 2017, we interviewed the carrier. Mr. stated he is a fill-in carrier for the fire damaged LLV. He stated that another driver had told him that she could hear a whistling sound when she drove the vehicle. He stated that on the day of the fire incident he noticed that the vehicle was smoking from the engine compartment so he immediately took it in to have it checked. He stated that the mechanic could not find anything wrong with the vehicle and after a few hours it was released to him. He stated that as he was driving the vehicle he noticed the vehicle smoking again and when he tried to accelerate it would not go any faster than approximately 15 miles per hour. Mr. stated that he could smell an odor that he thought smelled like transmission fluid. He stated that he called his supervisor and was advised to attempt to get the vehicle back to the postal facility. He stated that was when he was flagged down by another motorist and realized the vehicle was on fire.

On April 5, 2017, we interviewed the mechanic who examined the LLV on the day of the fire incident. Mr. stated that the vehicle was brought to him at approximately 8:00 A.M. with a complaint that it was smoking. He stated that he let the vehicle run for approximately two hours and did not observe any smoke coming from the vehicle. He stated that he did not make any repairs and released the vehicle to the carrier.

Service Records:

A review of the provided service records for the involved LLV was conducted. According to the maintenance records, besides regular vehicle maintenance, the vehicle had been serviced for several minor issues. It was noted that in April 2016, a new distributor and a new ignition coil were installed on the vehicle. Also during the past 18 months, the battery has been replaced at least three times, those dates being in September 2015, August 2016, and February 2017. There have also been miscellaneous electrical repairs made to the vehicle.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Van D. Tuley

Van D. Tuley, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

April 17, 2017
RCG File No. 50806792

Photograph 1
Front view of the vehicle.



Photograph 2
Driver's side of the vehicle.



April 17, 2017
RCG File No. 50806792

Photograph 3
Rear of the vehicle.



Photograph 4
Passenger side of the vehicle.



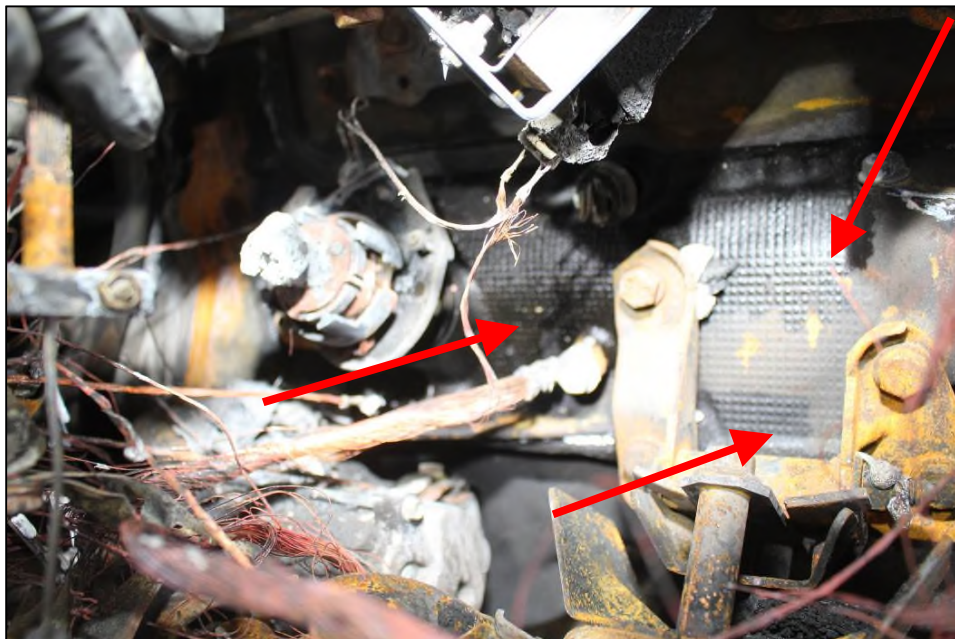
Photograph 5

The fire damaged engine compartment.



Photograph 6

Oil leakage on the driver's side of the engine.



Photograph 7

Oil level on the dipstick. Notice that the oil is past the maximum fill line and actually covers the word "DO" where it states "DO NOT OVERFILL".



April 17, 2017
RCG File No. 50806792

CVs



VAN D. TULEY, IAAI-CFI FIRE CONSULTANT

Mr. Tuley is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators. Mr. Tuley is a Licensed Private Investigator in North Carolina, South Carolina, and Georgia. He served as a Special Agent with the United States Department of Justice Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) for over twenty four years, the last fifteen years as a Certified Fire Investigator (ATF-CFI). As an ATF-CFI he responded to approximately five-hundred fire scenes, to include residential and commercial structures. Mr. Tuley was also a member of ATF's National Response Team (NRT) for approximately sixteen years, responding to major fire and explosion losses throughout the United States. He has completed numerous educational seminars and classes in the field of fire investigation throughout his career. He has testified as an expert witness in both Federal and State court proceedings as well as depositions involving the investigation of fires.

Mr. Tuley has coordinated and instructed continuing education training seminars in fire investigation for State and Local fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Tuley has also instructed and given presentations in Fire Investigation and Fire Dynamics for the American Academy of Applied Forensics, the North Carolina Chapter of the International Association of Arson Investigators (NCIAAI), and local community colleges; Report Writing and Scene Documentation for the North Carolina Chapter of the International Association of Arson Investigators; Arson Investigation and the Science of Fire, Forensics for Criminal Litigators, at the National Advocacy Center in Columbia, South Carolina; Explosions and Explosives for the Fire Engineering Technology Program at the University of North Carolina at Charlotte; as well as numerous classes on Explosives Recognition, Responding to an Explosive Incident, and Processing Explosive Scenes to State, Local and Federal investigators. Mr. Tuley has also been an instructor for fire and explosive related classes at the Federal Law Enforcement Academy in Glynco, Georgia.

Mr. Tuley has over thirty years of combined investigative experience as a Police Officer and Detective for the Portage, Indiana Police Department and as a Special Agent with the Bureau of Alcohol, Tobacco, Firearms and Explosives.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

University of Evansville, Evansville, Indiana
Bachelor of Science in Law Enforcement - 1977

University of Evansville, Evansville, Indiana
Master of Science in Criminal Justice - 1979

Indiana Law Enforcement Training Academy, Plainfield, IN.
Basic Law Enforcement Academy - 1979



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1881 Worcester Rd.
Suite 203
Framingham, MA 01701
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

Report of Findings

**LLV 2205000 FIRE
PITTSFIELD, MASSACHUSETTS**

RCG File No: 44802437

Scott Popovich

**Scott Popovich, CFEI, CFPS
Fire Consultant**

Jack R. Kennedy, III

**Jack R. Kennedy, III
Eastern Region Fire Manager**

TABLE OF CONTENTS

I. Introduction	1
II. Conclusions	2
III. Discussion	3
• Background	
• Vehicle Inspection	
• Interview	
• Analysis	
IV. Basis of Report	7
V. Attachments	8
A. Photographs	
B. VinLink	
C. CV	

Section I

INTRODUCTION

On September 30, 2015, a fire occurred involving a USPS LLV 2205000 on Tower Road in Dalton, Massachusetts. Rimkus Consulting Group, Inc. was retained to determine the origin and cause of the fire. Our inspection of the vehicle occurred on October 7, 2015.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time, as described in the **Basis of Report**. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Section II

CONCLUSIONS

1. It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment.
2. The specific area of fire origin was at the vehicle starter. The fire damage was consistent with fire growth from the starter to the top of the motor in a vertical direction following the protective split wire loom.
3. The specific ignition sequence and cause for the fire was determined to be a result of a failure at the starter positive electrical connection.

Section III

DISCUSSION

Background

The vehicle involved was a 1992 Grumman Allied, LLV that was purchased by the USPS and operated out of the Pittsfield, Massachusetts post office. The vehicle was on a mail route in Dalton Massachusetts being operated by the carrier who reported that he was parked on a walking loop near Tower Road and Bruce Drive. The vehicle was very difficult to start when he was leaving the loop prior to this location. He walked the mail loop which took approximately 10 minutes, when he went to start the vehicle he heard a “hissing” and “sizzling” noise. He then noticed small whiffs of smoke emanating from under the hood. He realized there may be a problem and decided to remove the mail from the vehicle. The smoke at this point was turning blacker and was also coming from the vent near the windshield. He waved someone down to call the fire department. Nearby resident arrived with a fire extinguisher and attempted to extinguish the flames. The Dalton Fire Department arrived and finished extinguishing the vehicle.

Vehicle Inspection

The vehicle was inspected at the Pittsfield Post office located at 212 Fenn Street, in Pittsfield, Massachusetts where the vehicle had been transported to after the fire event. The vehicle identification number (VIN) was 1GBCS10A5N2912516, which was observed on the data plate inside the passenger compartment of the vehicle **(Photograph 1)**.

The exterior was examined. We observed movement and intensity fire patterns on the hood of the vehicle. The paint was burned away in a u-shaped fire pattern in the center of the hood, indicating a fire originating in the engine compartment. The center of the windshield was broken due to thermal conditions. Movement and intensity fire patterns were observed on the fenders and roof area. The fender paint was burned away directly

above the wheel wells and the bordering paint was discolored due to thermal damage. The roof paint was starting to peel towards the windshield indicating a fire originating at the front of the vehicle. Smoke and soot staining was observed from both doors. The front right tire was partially off the rim and all the other tires were intact and inflated. The back door had evidence of fire patterns indicating it was in the open position during the fire **(Photographs 2 - 6)**.

The interior was inspected. The inspection began at the rear of the vehicle in the cargo compartment. Some light fire debris was observed on the floor of the cargo area. Movement and intensity fire patterns on both side walls indicated a fire progressing from the front of the vehicle to the rear. Some minor melting to the plastic vents and light lens covers occurred. The driver's area sustained severe heat and smoke damage. The aluminum fire wall and dash assembly was consumed by fire in the center of the dash. The plastic dash assembly around the steering wheel was consumed by fire. An exemplar vehicle was documented and examined at this time to better understand the dash assembly and layout of components in the LLV. The driver's seat sustained melting of the covering material. The debris in the interior was systematically layered and removed to the rear cargo compartment. We did not observe any material with evidentiary value in the debris. The electrical conductors were examined in the interior. We did not see any evidence of adverse electrical activity or anomalies in the conductors. The fuse panel was inspected. The protective cover was melted off. We observed thermal melting of the electrical wiring insulation, plastic tops of the fuses and the fuse panel body. We did not observe any adverse electrical activity or anomalies. Fire damage on the interior was determined to be caused by fire extension from the engine compartment through the manufactured openings in the fire wall. The fire did not originate on the interior of the LLV **(Photographs 7 - 13)**.

The engine compartment was examined from above. We observed movement and intensity fire patterns indicating fire movement from the firewall on the driver's side moving towards the front of the vehicle. The electrical conductors were examined on the top half of the engine compartment and we did not observe any adverse electrical

activity. We observed directional melting of the battery indicating a fire originating towards the back center of the compartment. The vehicle was placed on an inspection lift and the engine compartment was examined from below. We observed a wire hanging next to the starter with adverse electrical activity on the end. We then observed a hole in the starter which had evidence of dripping molten material, now cooled, and still attached. This area of the starter positive electrical connection was determined to be the area of fire origin **(Photographs 14 and 15)**.

The vehicle was placed on a mechanical inspection lift and the undercarriage was examined. The vehicle chassis was a closed box rail, an AM General frame, and we did not observe any fire damage or anomalies to the undercarriage of the LLV. The fuel lines running along the chassis were examined and we did not observe any damage from the rear of the vehicle to the engine compartment **(Photograph 16 - 18)**.

The vehicle starter and a piece of the power supply cable were recovered from the vehicle and retained as evidence. The Evidence was shipped to the Charlotte office of Rimkus Consulting Inc. to be analyzed in the laboratory by Jack R. Kennedy, III, IAAI-CFI to confirm the scene findings and failure point **(Photographs 19 - 22)**. The starter was examined and it was confirmed that an electrical fire event had occurred at the positive connection lug for the starter. There were no markings or indications on the starter as to the manufacturer. Evidence of an arcing event was observed on the starter and associated electrical conductor.

The VIN information on the vehicle was researched through VinLink, which verified the basic information of the vehicle. The VinLink report is attached.

A search for recall information on the 1992 LLV through the National Highway Traffic Safety Administration (NHTSA) was conducted and we found no pertinent recall campaigns related to the fire. One recall was found and was incomplete according to GM records, GM recall number **N960061** dated October 8, 1996.

GM Program #:
N960061

Date Issued:
Oct 08, 1996

Program Title:
INTERMEDIATE STEERING SHAFT DETACHMENT

Program Status: INCOMPLETE

Interview

The driver was interviewed and reported the following information:

- He had been the driver of the vehicle for a while.
- The weather the day of the fire was rainy and misty.
- He was a non-smoker.
- His day consisted of driving and parking for walking loops.
- He did not have a fire extinguisher in the vehicle to use.

Analysis

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment. The specific area of fire origin was at the vehicle starter. The fire damage was consistent with fire growth from the starter to the top of the motor in a vertical direction following the protective split wire loom. The specific ignition sequence and cause for the fire was determined to be a result of a failure at the starter positive electrical connection.

Section IV

BASIS OF REPORT

1. An on-site inspection of LLV 2205000 located at 212 Fenn Street Pittsfield, Massachusetts was performed by Scott S. Popovich, CFEI, on October 07, 2015.
2. Photographs were taken by Scott S. Popovich, CFEI, on October 7, 2015.
3. Information obtained and interview conducted with the driver of the vehicle.
4. A laboratory examination of collected evidence.
5. A review of photographs and field notes taken on October 7, 2015 during the inspection of the vehicle by Scott S. Popovich, CFEI.
6. A review of LLV Number 2205000 service record.
7. A review of the VinLink report for the 1992 LLV Number 2205000.
8. A review of the recall records for the 1992 LLV through the National Highway Traffic Safety Administration (NHTSA).
9. While performing the investigation, the methodology of fire investigation was National Fire Protection Association 921 – “Guide for Fire & Explosion Investigations”.

Section V
ATTACHMENTS

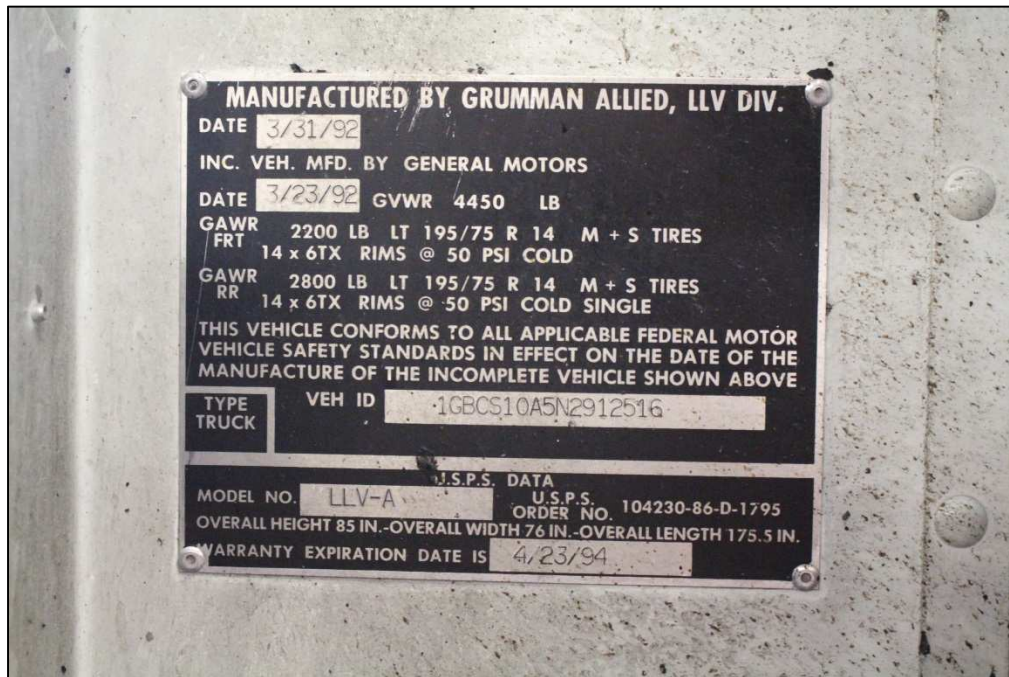
- A. Photographs
- B. VinLink Report
- C. CV

Section V
ATTACHMENT A

Photographs

Photographs taken during our inspection, which were not included in this report, were retained in our files and are available to you upon request.

Photograph 1
Data plate.



Photograph 2
Front of LLV.



Photograph 3
Driver's side of LLV.



Photograph 4
Rear of LLV.



Photograph 5
Side of LLV.



Photograph 6
Roof of LLV.



Photograph 7
Cargo Compartment.



Photograph 8
Movement Fire pattern indicating a fire originating in the front of the vehicle.



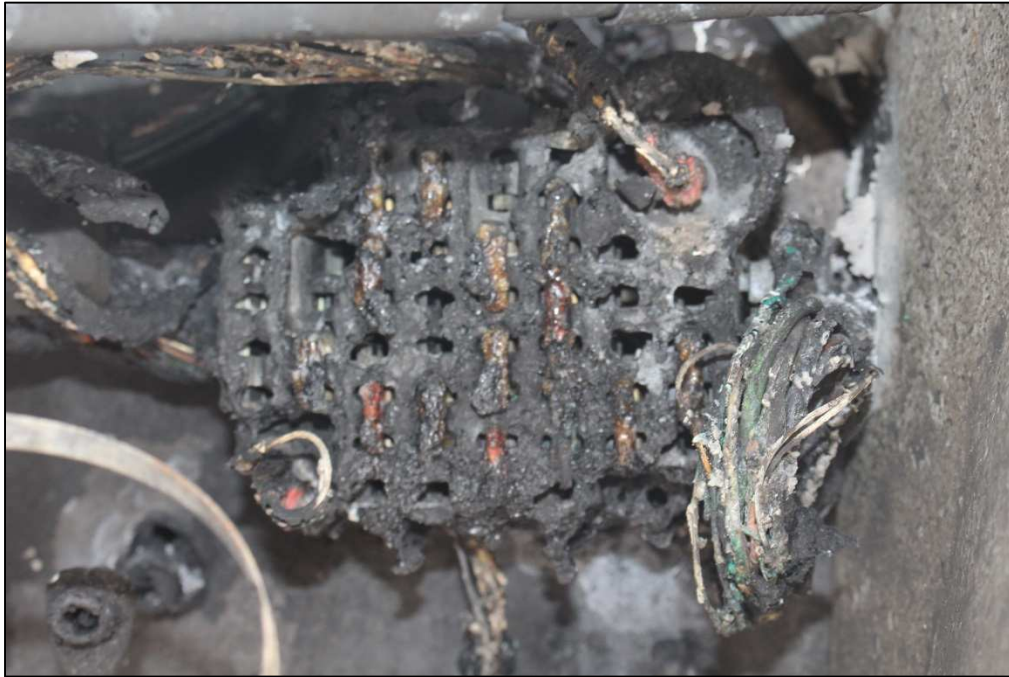
Photograph 9
Dashboard of LLV.



Photograph 10
Drivers area.



Photograph 11
Melted fuse panel.



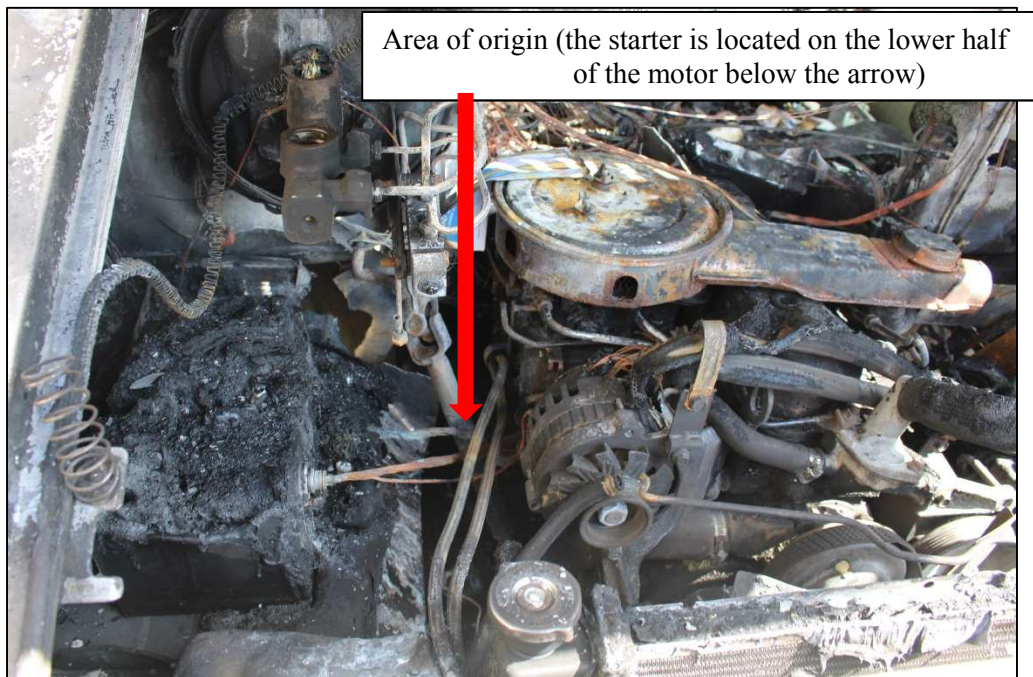
Photograph 12
Interior of LLV after delayering of the fire debris.



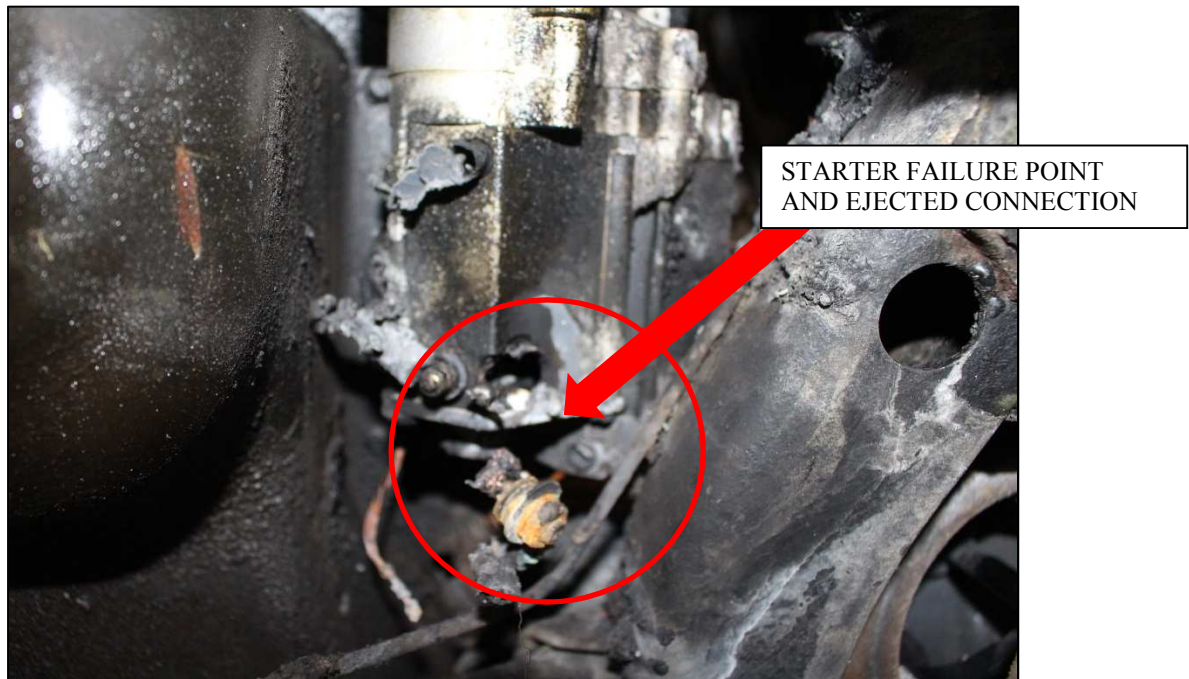
Photograph 13
Exemplar LLV dashboard.



Photograph 14
Engine compartment.



Photograph 15
Starter and cable.



Photograph 16
Undercarriage of LLV.



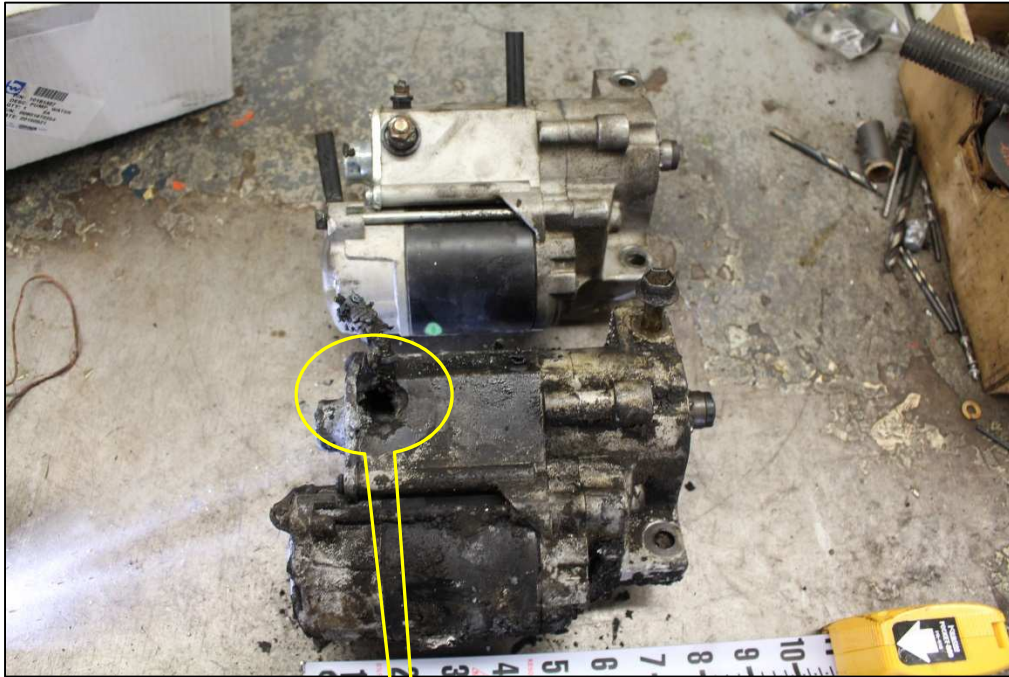
Photograph 17
Undercarriage of LLV.



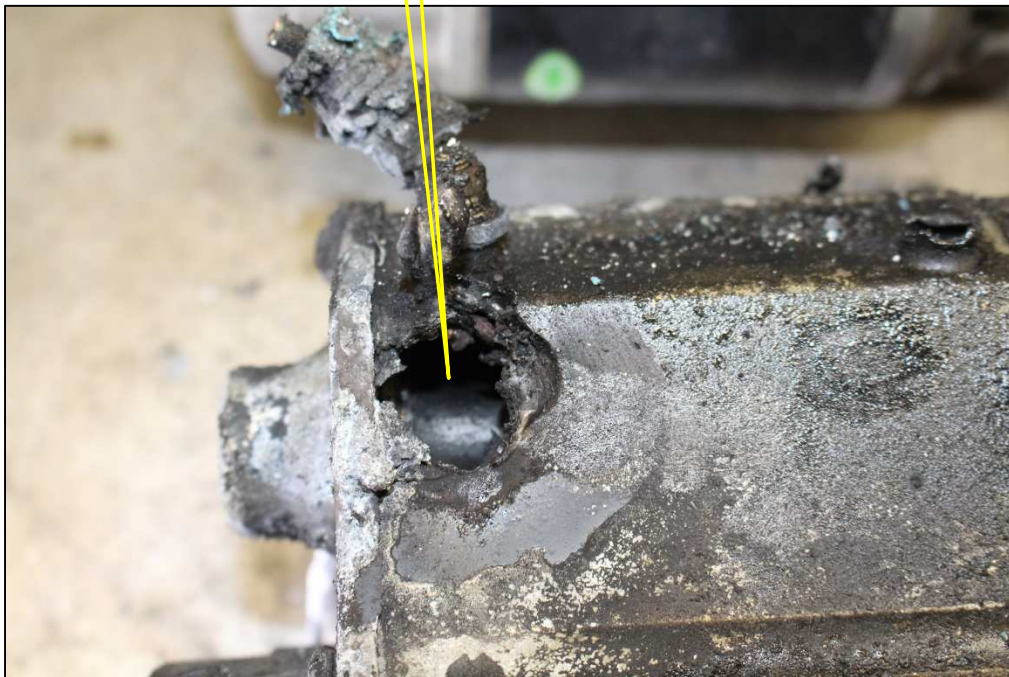
Photograph 18
Undercarriage of LLV.



Photograph 19
Failed starter and exemplar.



Photograph 20
Close up of the area of failure.



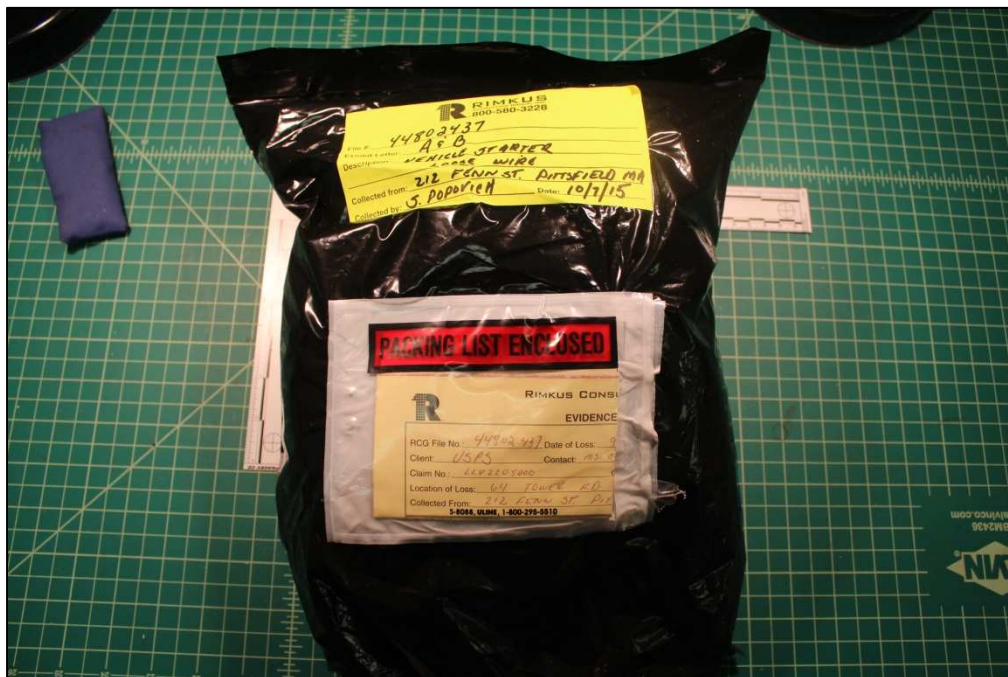
Photograph 21

Electrical connection point of starter still attached to power cable.



Photograph 22

Evidence as packaged for shipping.



Section V
ATTACHMENT B

VinLink Report



Report type: BASIC

VIN: 1GBCS10A5N2912516

Copyright © 2005 ESP Data Solutions, Inc. All rights reserved. Reproduction of this publication in any form without prior written permission is forbidden. The information contained herein has been obtained from sources believed to be reliable. ESP Data Solutions disclaims all warranties as to the accuracy, completeness or adequacy of such information. ESP Data Solutions shall have no liability for errors, omissions or inadequacies in the information contained herein or for interpretations thereof. The reader assumes sole responsibility for the selection of these materials to achieve its intended results.

VIN number: 1GBCS10A5N2912516**DECODED: Chevrolet - LLV (1992)**

Model Year	1992
Make	Chevrolet
Model	LLV
Trim Level	Base
Series	Postal Vehicle
Body Type	3 Door Van; Cargo
Manufacturer	General Motors Corporation
Production Seq. Number	912516
Engine Type	L4, 2.5L
Engine Manufacturer	General Motors
Fuel Type	Gasoline
Engine Code	A
Drive Line Type	RWD
Vehicle Type	Van
Vehicle Class	Mini Van
Brake System	Hydraulic
Country	UNITED STATES
Assy. Plant	Moraine, OH
GVWR Class	Class C: 4,001-5,000 lb
Tonnage	1/2
Check Digit	5
AAIA	7062/45265
AAIA ENGINE	1600
AAIA LEGACY	1360370
AAIA TRANSMISSION	1112
AAIA VehicleID	7062
AAIA EngineConfigID	1600
AAIA TransmissionID	1112
AAIA BodyStyleConfigID	74
AAIA BrakeConfigID	8
AAIA DriveTypeID	7
AAIA SpringTypeConfigID	8

Section V
ATTACHMENT C

CVs



SCOTT S. POPOVICH, CFPS, CFEI, CVFI, FIT FIRE CONSULTANT

Mr. Popovich's professional career includes 25 years with the Woonsocket Fire Department in the city of Woonsocket, RI. In that capacity he has been involved in many different emergency services including Deputy Director of Emergency Management, Assistant Fire Marshal, Lieutenant and Firefighter. As a licensed state of Rhode Island Assistant Deputy State Fire Marshal his duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Popovich has a Master of Science in Fire and Arson Investigation from the University of New Haven with a heavy concentration in forensics and a Bachelor of Science in Public Administration from Roger Williams University. He maintains certifications as a fire investigator and fire inspector and has attended numerous classes at the National Fire Academy and the Rhode Island State Crime Laboratory.

Mr. Popovich was recently recognized for project development for the planning and execution of Emergency Response Training for CVS Corporate Headquarters in Woonsocket, Rhode Island.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

M.S. – Fire and Arson Investigation – University of New Haven, Connecticut
B.S. – Public Administration – Roger Williams University, Rhode Island
A.S. – Fire Science – Community College of Rhode Island

Licenses and Certifications

Fire Investigative Technician (FIT) by the International Association of Arson Investigators
Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) by the National Association of Fire Investigators
Certified Fire Protection Specialist (CFPS) by the National Fire Protection Association
Certified Fire Inspector (CFI) by the National Fire Protection Association
Certified Evidence Collection Technician (ECT) by the International Association of Arson Investigators
Licensed Emergency Medical Technician by the State of Rhode Island
Licensed Oil Heat Technician
Licensed Hoisting Equipment Operator by the State of Rhode Island
Licensed Private Detective in the State of Rhode Island

Professional Memberships

IAAI (International Association of Arson Investigators)
RIIAAI (Rhode Island Chapter of International Association of Arson Investigators) Board Member



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus North Carolina, PLLC
5900 Harris Technology Blvd, Suite P
Charlotte, NC 28269
(704) 896-6227 Telephone
(704) 896-6228 Facsimile
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2018

September 20, 2017

Re: RCG File No:

LLV Number: 47108161
VMF Location: 3304618
Subject: 2901 Scott Futrell Drive in Charlotte, North Carolina
Preliminary/Final Report

Dear

On August 20, 2017, a fire occurred involving LLV 3304618 on I-485 near Matthews, North Carolina. On August 28, 2017, Rimkus Consulting Group, Inc. was retained to examine LLV 3304618, VIN 1GBCS10A6P2912561.

On August 31, 2017, we conducted an examination of the LLV at the Charlotte, North Carolina vehicle maintenance facility located at 2901 Scott Futrell Drive in Charlotte, North Carolina. In the course of our work, we examined the vehicle, excavated fire debris, documented with photos, and interviewed the maintenance manager. Our work to complete this assignment was performed by Fire Consultant Van D, Tuley, IAAI-CFI (V). A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was at and around the exhaust manifold on the left side of engine where oil sprayed onto the exhaust when an engine rod penetrated through the engine block.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a thrown rod through the engine block causing a hole in the oil pan which allowed ignitable engine fluids to be expelled onto the hot surface of the operating LLV and ignite.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed on the exterior of the LLV. The cover over the cab area of the vehicle had melted and/or been consumed by the fire as had the covering for the engine compartment. Severe fire damage was observed to both the left and right front fenders as well as the top of the LLV. Fire damage was also observed to the rear rollup door to the LLV. All four tires were intact.

Interior Inspection:

Examination of the interior of the LLV revealed severe fire damage to the operator compartment as well as the cargo area. The dash area of the LLV was severely fire damaged as was all electrical wiring within the dash area. The fire damage in the interior of the LLV was consistent with a fire originating in the engine compartment and progressing into the interior.

Engine Compartment Inspection:

The vehicle was equipped with a GM 2.5L gasoline engine. Severe fire damage was observed in the engine compartment. Severe fire damage was observed to the battery which was located at the right front corner of the engine compartment. The brake master cylinder and the fuel throttle body system had also sustained severe fire damage. Examination of the front of the engine compartment revealed sections of hose and rubber belts that were intact but severely fire damaged. Electrical wiring within the engine compartment was examined but there were no indications of adverse electrical activity on the wiring.

An examination of the engine block of the LLV revealed a large hole on the left side of the engine block directly behind the exhaust manifold. The hole was parallel with the

engine crank shaft and appeared to have been blown from the inside out by a piston rod failure. A large quantity of oil was observed on the back side of the exhaust manifold. Based on the fire patterns observed, the left side of the engine within the engine compartment was determined to be the area of origin.

Undercarriage Inspection:

Examination of the undercarriage revealed fire damage to the front end of the vehicle on the left side. No fire damage was observed to the rear area of the undercarriage. Fire damage was observed beneath the left side of the engine compartment. The oil pan drain plug and oil filter were both present and did not display any evidence of having leaked. Engine oil was observed on multiple components of the undercarriage at the left side of the engine compartment, which was the result of engine oil being expelled through the engine block when the rod pierced the side of the engine block.

Fuse Panel Inspection:

The fuse panel had sustained severe fire damage. The condition of the fuses within the panel could not be determined due to the severe fire damage.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated in the engine compartment on the left side of the engine at the exhaust system.

Contributing Factors:

The LLV reportedly was being driven at the time of the fire. The carrier, Ms. Brittany Coleman, stated the vehicle started making a noise and the check engine light came on and she saw smoke coming from the area of the engine compartment.

A large hole was observed on the left side of the engine block directly behind the exhaust manifold. The hole was parallel with the engine crank shaft and appeared to have been blown from the inside out by a piston rod failure. A large quantity of oil was observed on the back side of the exhaust manifold.

The evidence observed was consistent with a catastrophic failure of the engine. The most probable cause for the fire was the ignition of leaking engine oil vapor by a competent ignition source. The competent ignition sources in the area of origin would have been the hot surfaces of an engine component. The engine oil vapor would have escaped when the fractured connecting rod pierced through the left side of the engine block.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

We were provided with a written statement from the mail carrier. Ms. stated, "On Sunday August 20, 2017, I was driving on I-485 in my LLV. As I was driving down the highway, the vehicle started to make a noise so I pulled over. When I pulled over the LLV's check engine light came on and it began to smoke. A passerby stopped and told me that it was on fire. I got out of the LLV to see but I saw nothing. I walked away from the LLV and when I turned around the vehicle was in flames."

Service Records:

A review of the provided service records for the involved LLV revealed that the last preventative maintenance was conducted on June 12, 2017. No recent repairs or service was noted that would have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,

RIMKUS NORTH CAROLINA, PLLC

Van D. Tuley

Van D. Tuley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager
Attachments: Photographs, CVs

September 20, 2017
RCG File No. 47108161

Photograph 1
Front view of the LLV.



Photograph 2
Rear view of the LLV.



September 20, 2017
RCG File No. 47108161

Photograph 3
Side view of the LLV.



Photograph 4
Cargo area of the LLV.



September 20, 2017
RCG File No. 47108161

Photograph 5
Dash area of the LLV.



Photograph 6
Engine compartment of the LLV.



Photograph 7

Exhaust manifold located on the left side of the engine block.



Photograph 8

Hole in the engine block behind the exhaust manifold.



September 20, 2017
RCG File No. 47108161

CVs



VAN D. TULEY, IAAI-CFI FIRE CONSULTANT

Mr. Tuley is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators. Mr. Tuley is a Licensed Private Investigator in North Carolina, South Carolina, and Georgia. He served as a Special Agent with the United States Department of Justice Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) for over twenty four years, the last fifteen years as a Certified Fire Investigator (ATF-CFI). As an ATF-CFI he responded to approximately five-hundred fire scenes, to include residential and commercial structures. Mr. Tuley was also a member of ATF's National Response Team (NRT) for approximately sixteen years, responding to major fire and explosion losses throughout the United States. He has completed numerous educational seminars and classes in the field of fire investigation throughout his career. He has testified as an expert witness in both Federal and State court proceedings as well as depositions involving the investigation of fires.

Mr. Tuley has coordinated and instructed continuing education training seminars in fire investigation for State and Local fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Tuley has also instructed and given presentations in Fire Investigation and Fire Dynamics for the American Academy of Applied Forensics, the North Carolina Chapter of the International Association of Arson Investigators (NCIAAI), and local community colleges; Report Writing and Scene Documentation for the North Carolina Chapter of the International Association of Arson Investigators; Arson Investigation and the Science of Fire, Forensics for Criminal Litigators, at the National Advocacy Center in Columbia, South Carolina; Explosions and Explosives for the Fire Engineering Technology Program at the University of North Carolina at Charlotte; as well as numerous classes on Explosives Recognition, Responding to an Explosive Incident, and Processing Explosive Scenes to State, Local and Federal investigators. Mr. Tuley has also been an instructor for fire and explosive related classes at the Federal Law Enforcement Academy in Glynco, Georgia.

Mr. Tuley has over thirty years of combined investigative experience as a Police Officer and Detective for the Portage, Indiana Police Department and as a Special Agent with the Bureau of Alcohol, Tobacco, Firearms and Explosives.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

University of Evansville, Evansville, Indiana
Bachelor of Science in Law Enforcement - 1977

University of Evansville, Evansville, Indiana
Master of Science in Criminal Justice - 1979

Indiana Law Enforcement Training Academy, Plainfield, IN.
Basic Law Enforcement Academy - 1979



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, NJ 07631
(201) 368-8551 Telephone
(201) 368-8557 Facsimile

Certificate of Authorization No. 24GA28127700

May 22, 2017

Re: RCG File No:

LLV Number: 47809423
VMF Location: 3305991
Subject: 308 Thomas Street in Newark, New Jersey
Preliminary/Final Report

Dear

On April 27, 2017, a fire occurred involving LLV 3305991 on Martine Drive in Scotch Plains, New Jersey. On May 5, 2017, Rimkus Consulting Group, Inc. was retained to examine LLV 3305991, VIN 1GBCS10A9P2913851.

On May 16, 2017, an examination was conducted of the LLV at the Newark, New Jersey vehicle maintenance facility located at 308 Thomas Street in Newark, New Jersey. In the course of our work, we examined the vehicle, excavated fire debris, documented with photos, and interviewed the maintenance manager. Our work to complete this assignment was performed by Fire Consultant Jonathan Sivils, IAAI-CFI. This report and case was technically reviewed by Technical Fire Manager David Meyers, IAAI-CFI.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was at and around the exhaust manifold on the left side of engine where oil was sprayed on the exhaust when an engine rod penetrated through the engine block.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a thrown rod through the engine block causing a hole in the oil pan which allowed ignitable engine fluids to be expelled onto the hot surface of the operating LLV and ignite.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. No fire damage was observed on the exterior of the LLV. The wheels and tires were intact. There was no evidence to indicate that the LLV had recently been involved in a collision. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

We observed the operator compartment had sustained no fire damage. We observed that the ignition key was present in the ignition switch. All electrical circuits were intact and undamaged. The cargo compartment also sustained no fire damage. There was no physical evidence observed on the interior of the LLV that would have caused or contributed to the cause of the fire.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine. Fire damage was observed along the bottom of the engine compartment. The air filter cover and filter were examined and observed with no fire damage. The electrical wires that transverse the area were undamaged by fire, thus eliminating them as a cause. The fuel system was examined and found to be intact and free of fire damage. The fuel filter was observed intact with no fire damage and located along the rear of the engine near the fire wall. The fuel system was the GM model.

The battery for the vehicle was located at the front right side of the engine compartment and had no fire damage. The battery, the battery terminals, and battery cables were examined and found to be intact and undamaged, no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a

cause of the fire. The engine oil, transmission fluid, power steering fluid, and brake fluid were examined and observed to be within their normal operating range. The carburetor was examined and observed with no fire damage to the top portion of the carburetor where the air filter housing was mounted.

An examination of the engine block was conducted. A large hole was observed on the left side of the engine block directly behind the exhaust manifold. The hole was parallel with the engine crank shaft and appeared to have been blown from the inside out by a piston rod failure. A large quantity of oil was observed on the back side of the exhaust manifold. Based on the fire patterns observed, the left side of the engine within the engine compartment was determined to be the area of origin.

Undercarriage Inspection:

Examination of the undercarriage revealed fire damage to the front end of the vehicle on the left side. No fire damage was observed to the rear areas of the undercarriage. We observed direct fire damage beneath the left side of the engine compartment. The rubber components of the fuel lines which extended along the frame on the left side of the vehicle were intact. The oil pan drain plug and oil filter were both present and did not exhibit evidence of having leaked. We observed the presence of engine oil on multiple components of the undercarriage at the left side of the engine compartment. This condition most probably resulted when the fractured connecting rod pierced the engine block, permitting the engine oil to escape.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained no fire damage. All fuses were intact and no blown fuses were observed.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated in the engine compartment on the left side of the engine at the exhaust system.

Contributing Factors:

The LLV reportedly was being driven at the time of the fire. The carrier stated the vehicle made a loud "pop" sound and then he saw smoke coming from under the front of the vehicle.

A large hole was observed on the left side of the engine block directly behind the exhaust manifold. The hole was parallel with the engine crank shaft and appeared to have been blown from the inside out by a piston rod failure. A large quantity of oil was observed on the back side of the exhaust manifold.

The evidence observed is consistent with a catastrophic failure of the engine. The most probable cause for the fire was the ignition of leaking engine oil vapor by a competent ignition source. The competent ignition sources in the area of origin would have been the hot surfaces of an engine component. The engine oil vapor would have escaped when the fractured connecting rod pierced through the left side of the engine block. A fractured connecting rod is most commonly caused by inadequate lubrication or over revving of the engine. However, there are numerous other causes that may have created or contributed to this condition.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

We have attempted to interview the mail carrier but have been unsuccessful. An interview of the VMF maintenance manager was taken and he provided the following information.

The LLV reportedly was being driven at the time of the fire. The carrier stated the vehicle made a loud "pop" sound and then he saw smoke coming from under the front of the vehicle. The police department responded and used a dry chemical fire extinguisher to extinguish the flames.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jonathan K. Sivils

Jonathan K. Sivils, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

May 22, 2017
RCG File No. 47809423

Photograph 1
Front of vehicle.



Photograph 2
Right front of vehicle.



May 22, 2017
RCG File No. 47809423

Photograph 3
Rear of vehicle.



Photograph 4
Left rear of vehicle.



May 22, 2017
RCG File No. 47809423

Photograph 5
Engine compartment.



Photograph 6
Air cleaner and carburetor.



May 22, 2017
RCG File No. 47809423

Photograph 7
Underside of vehicle.



Photograph 8
Crank case of engine.



May 22, 2017
RCG File No. 47809423

Photograph 9
Hole in crank case.



Photograph 10
Hole from crank shaft failure.



May 22, 2017
RCG File No. 47809423

Photograph 11
Area of origin.



May 22, 2017
RCG File No. 47809423

CVs



Jonathan Sivils, IAAI-CFI, FIT, CFEI Fire Consultant

Mr. Sivils is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, as well as a Fire Investigation Technician (IAAI-FIT) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). He also holds an Associate of Science Degree in Fire Protection Technology. In a career spanning more than 25 years in the fire service, he has investigated and determined the origin and cause of more than 800 fires, to include commercial structures, residential structures, vehicles, marine and heavy equipment. He has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Sivils is a court-qualified expert witness in Criminal and Civil proceedings. Mr. Sivils has extensive training in fire and criminal investigations.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S Fire Protection Technology – Americus University, Washington D.C. – 2002
Bucks County Fire Chiefs and Firefighters Association
Bucks County Fire Marshal Association
International Association of Arson Investigators
National Association of Fire Investigators
National Fire Protection Association
Pennsylvania Association of Arson Investigators

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2012 – 2015	Donan Engineering Company, Inc.
2007 – 2012	Bucks county Fire Marshal Office, Bucks County, Pa
2005 – 2007	U.S. Department Of Defense Fire and Emergency Services
2009 – 2010	NEFCO Fire Investigations, Philadelphia, Pa
2003 – 2005	U.S. Department of Homeland Security
1998 – 2003	U.S. Department Of Defense Fire and Emergency Services
1993 – 2010	Penndel Fire Company, Penndel, Pa



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
5099 Commercial Circle, Suite 100
Concord, CA 94520
(925) 677-7439 Telephone
(925) 677-7445 Facsimile

May 12, 2017

Re: RCG File No:

LLV Number: 01906073
VMF Location: 3308840
Subject: 1675 7th Street in Oakland, California
Preliminary/Final Report

Dear

On April 11, 2017 a fire occurred in a US Postal Service vehicle that was traveling on interstate 580 east bound in the city of Oakland, California. On April 13, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1993 Grumman LLV 3308840. On April 18, 2017, we conducted a fire origin and cause examination on the vehicle at 1675 7th Street in Oakland, California.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Jimmie McCants, NAFI-CFEI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was at and around the exhaust manifold where oil was sprayed on the exhaust when an engine rod penetrated through the engine block.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a thrown rod through the engine block which allowed ignitable engine fluids to be expelled onto the hot surface of the operating LLV and ignite.

Observations

Exterior Inspection:

For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The fire severely damaged the hood, windshield, dash and passenger compartment on the right side of the LLV. There was no evidence to indicate that the LLV had recently been involved in a collision. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Fire patterns were consistent with the fire having originated within the engine compartment and having extended into the driver's compartment. The front left tire was fire-damaged and had lost inflation. The remaining tires were still holding inflation and did not exhibit evidence of fire damage.

Interior Inspection:

We observed significant direct fire damage within the driver's compartment. The dashboard, driver seat fabric, and mail carrier tray had been consumed by the fire. The fire extended from the passenger compartment into the cargo area.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L four-cylinder gasoline engine. Severe fire damage was observed throughout the engine compartment with the majority of the damage being on the right side. Electrical wires that transverse the area were damaged by fire and were observed attacked by the fire and not the cause of the fire. The fuel system was examined and found to be damaged in the area of the damage to the engine block.

The battery for the vehicle was located at the front right side of the engine compartment and was not a factor in the cause of the fire. We were not able to inspect the oil levels for the power steering and engine oil as the block had been damaged and the power steering reservoir had been consumed by the fire.

An examination of the engine block was conducted. A large hole was observed on the left side of the engine block directly behind the exhaust manifold. The hole was parallel with the engine crank shaft and appeared to have been blown from the inside out by a connecting rod failure. A large quantity of oil was observed on the back side of the exhaust manifold. Based on the fire patterns observed, the left side of the engine within the engine compartment was determined to be the area of origin. The vehicle was not equipped with a High Energy Ignition (HEI) distributor.

Undercarriage Inspection:

The vehicle was elevated with a tow truck and we examined the undercarriage of the vehicle. We observed a fracture with a hole in the left side of the oil pan. We observed the fire damage patterns on the adjacent exhaust system. The fuel lines were severely damaged by fire and fractured. We observed fire damage patterns extending from the lower side of the engine toward the rear of the vehicle. The LLV was mounted on a GM frame.

Fuse Panel Inspection:

We examined the fuse panel. It was completely melted and destroyed by heat. We could not determine the status of the electrical fuses or systems.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment on the left side of the engine at the exhaust system.

Contributing Factors:

A large hole was observed on the left side of the engine block in front of the exhaust manifold. The hole was parallel with the engine crank shaft and appeared to have been blown from the inside out by a piston rod failure. A large quantity of oil was observed on the back side of the exhaust manifold.

The evidence observed is consistent with a catastrophic failure of the engine. The most probable cause for the fire was the ignition of leaking engine oil onto the hot exhaust manifold.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

We attempted to interview the mail carrier but have been unsuccessful. We have included a copy of her written statement obtained from the VMF Manager at the time of our inspection.

The LLV reportedly was being driven at the time of the fire. The vehicle was traveling at highway speeds on interstate 580. The carrier had stated in her report that several cars were pointing at her when she heard what sounded like a backfire. She saw smoke coming from the rear of the vehicle but kept driving until highway patrol pulled her over and helped her escape from the burning LLV.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jimmie L. McCants

Jimmie L. McCants II, NAFI-CFEI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

May 12, 2017
RCG File No. 01906073

Photograph 1

Front of LLV showing fire progression.



Photograph 2

Left front of LLV showing origin area.



Photograph 3

Hole in engine block from connecting rod.



Photograph 4

Hole in block in close proximity of exhaust.



May 12, 2017
RCG File No. 01906073

CVs



**JIMMIE McCANTS, IAAI, CFEI
FIRE CONSULTANT**

Mr. McCants is a Certified Fire and Explosion Investigator and a licensed private investigator in California. With 22 years of fire investigation experience and 26 years of law enforcement experience he is uniquely qualified to work the most complex fire losses. He has investigated over 1,000 fires during his long career. He was assigned as a lead investigator for a multi-county fire investigation unit in California. Mr. McCants has investigated several fatal fires as well as numerous high profile fires and bombing incidents throughout northern California. He is well versed in taking statements and in the warning signs of arson and possible insurance fraud cases.

As a prior detective Mr. McCants is well versed in collecting and preserving evidence. His structural fire and explosion experience on scene for various types of occupancies has given him working knowledge of building construction, fire behavior, and post investigation techniques for analyzing damage assessment and fire cause and origin.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire and Explosion Investigator, National Association of Fire Investigators 2012
Certified Arson / Explosive Investigator, Robert Pressley Institute of Criminal Investigations 1999
Associates of Sciences degree Solano Community College, 2000

EMPLOYMENT HISTORY

2013 – Present	Rimkus Consulting Group, Inc.
2011 – 2013	G4S Compliance and Investigations, part-time fire investigator
1985 – 2011	Solano County Sheriff's Office



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
14635 West 95th Street
Lenexa, KS 66219
(800) 618-2210 Telephone
(877) 228-2223 Facsimile

September 12, 2017

Re: RCG File No:

	22601291
LLV Number:	3319491
VMF Location:	7117 West Harry Wichita, Kansas
Subject:	Preliminary/Final Report

Dear

On August 22, 2017, a fire occurred in a US Postal Service vehicle at 900 Marshall Way in Dodge City, Kansas. On August 28, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1993 GM LLV 3319491. The last maintenance was on May 29, 2017, at the USPS Vehicle Maintenance Facility. On August 30, 2017, we conducted a fire origin and cause examination on the vehicle at US Postal Service Maintenance Facility located at 7117 West Harry in Wichita, Kansas.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records, and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Dennis N. Cranor, IAAI-CFI. A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the vehicle.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of an engine fluid leak (IE: fuel, oil, transmission fluid) onto a hot engine surface as the possible cause of the fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the rear exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Fire damage was observed to the front of the vehicle. The engine cover had sustained smoke and fire damage. We observed smoke and heat damage to the front windshield.

Minor heat damage was observed to the upper portion of the engine cover. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the examination, all of the LLV tires were found to be of the same make, size and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

Examination of the interior of the vehicle revealed minor smoke and fire damage to the front of the mail compartment. The steering column and brake pedal assembly had not been fire damaged. The mail tray was still in the correct placement. The rear cargo area was not fire damaged. All fuses were examined and all were found to be in proper working order. The heater fan was present in the correct location. A ventilation fan was mounted on the dash for the driver's air movement, no damage was observed.

The most severe fire damage was observed at the bulkhead, dashboard, windshield, and steering column. The burn patterns observed to the interior area progressed

upward and outward from the engine compartment. After a review of the progression of the burn patterns, it was determined the fire progressed from the engine compartment into the mail compartment through the manufactured holes in the bulkhead and due to the failure of the windshield. We observed the ignition switch to be in the off position, and no key was present in the switch. Examination of the cargo compartment revealed minor smoke damage; fire debris was located in the cargo compartment.

Engine Compartment Inspection:

Examination of the engine compartment revealed severe fire damage throughout the compartment. The LLV was on an S10 frame, the engine was a 2.2L, four-cylinder gasoline fuel injected, standard coil engine. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the engine compartment. The engine compartment sustained fire, heat, and smoke damage throughout. The damage was most severe to the center of the engine and rear. The brake booster positioned on the right rear bulkhead sustained fire and heat damage. The brake fluid reservoir had been partially damaged by the heat from the fire.

The wiring harness sustained fire and heat damage. The insulation had been consumed. The alternator sustained minor heat damage. The insulation had not been consumed from the conductors to the alternator. The main conductor was secure with no evidence of adverse electrical activity. The auxiliary conductor was secure. The top of the battery case had sustained fire and heat damage. The conductors and terminals had been detached from the battery by the fire suppression crew. The negative conductor was attached to the frame and to the block. The main positive conductor was attached to the starter. The insulation had not been consumed and displayed no evidence of adverse electrical activity. The fuel rail had sustained severe fire damage. The injectors sustained severe damage but were intact. The fuel lines had not sustained severe fire damage and mass loss.

The power steering unit positioned at the left front of the engine sustained heat damage. The flexible return line and reservoir was in its correct position. The upper radiator hose sustained minor heat damage. The flexible section of the vapor return line from the fuel tank to the canister mounted in the grill was not damaged. The flexible section from the canister to the solenoid at the rear of the throttle body had been consumed.

The starter was undamaged by the fire and the conductors were secure. The insulation had been consumed on the conductors routed across the engine from the battery to the starter.

Examination of the engine fluid level was determined, after we cut the oil fill tube to access the dip stick. We did access the oil dip stick and observed oil on the stick. Examination of the transmission fluid level revealed the transmission fluid was within factory recommendation limits.

The fan belt was still in the proper position on the pulley's of the crankshaft and alternator.

Examination of the engine was conducted, and no cracks or holes were observed within the engine or engine block.

Our examination revealed what appeared to be a metal air filter canister, that had been disconnected from the inside wall of the engine compartment. The metal canister was severely damaged by fire.

The wiring harness was examined and no evidence of adverse electrical activity was observed.

Undercarriage Inspection:

We examined the undercarriage of the vehicle, which revealed no fire damage to the undercarriage. The vehicle's fuel system was intact to the tank, with the fuel filter mounted on the frame, near the rear of the vehicle. The fuel lines were positioned within the open frame routed to the front of the vehicle. The vehicle was equipped with a GM fuel filter system.

Fuse Panel Inspection:

Examination of the fuse panel revealed no fire damage to the panel and wiring insulation, and only the wiring conductors were present during our examination. Examination of the conductors and fittings, did not reveal any adverse electrical activity on any of the conductors. The fuse block located on the right side of the driver's compartment was still in the correct placement.

Interviews:

Our interview with the driver of the LLV, was conducted on September 7, 2017. Mr. was driving the vehicle on the day of the fire. Mr. stated that the vehicle was his normal vehicle of service, and that on the day of the fire he did not notice anything unusual in the performance of the vehicle. The only thing that he noticed unusual for the past several weeks was the dash mounted fan would turn on and off at various times.

On the day of the fire, Mr. had started out on his route and delivered mail to a large amount of the route. At approximately 11:40 A.M., Mr. arrived at his residence for a lunch break. He drove the LLV in the driveway and parked it. At approximately 11:50 A.M., a woman came to his door and advised that the mail truck was on fire. The person who stopped at the residence had called the fire department.

Mr. opened the right side door and found the entire interior was full of smoke. He opened the other side and the smoke started to exit the interior of the LLV. He attempted to open the engine cover, but found the hood pull was not operating correctly. Mr. obtained a residential water hose and tried to extinguish the fire. Mr. sprayed water on the engine compartment until the fire department arrived to extinguish the fire. The fire department arrived on the scene at 11:56 A.M.

We spoke to the maintenance supervisor, Mr. at the US Postal Service Maintenance Facility; he did not know of any problems with the LLV involved.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the engine compartment of the vehicle. The area of origin was determined to be on the backside of the engine.

Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination. We could not eliminate the possibility of an engine fluid leak (IE: fuel, oil, power steering fluid, transmission fluid, etc.) onto a hot engine surface as the possible cause of the fire.

Raw fuel vapors may have collected inside the metal air filter, most probably after the vehicle was filled up with fuel during the route. One possible ignition factor could have been at some point during the route, the vapors may have come in contact with a high heat source, possibly heat from the exhaust manifold, located directly below the air filter plastic tube, causing the fuel vapors to ignite. The vehicles ignition was off at the time of the fire.

Service Records:

A review of the service records provided for the involved LLV did not reveal any recent repairs or work that would have caused or contributed to the cause of the fire. The last service was on June 1, 2017, when spark plugs and horn contact were replaced.

Evidence Collected:

No items were collected.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Dennis N. Cranor

Dennis N. Cranor, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

September 12, 2017
RCG File No. 22601291

Photograph 1
Front view of the LLV.



Photograph 2
Drivers side of the LLV.



September 12, 2017
RCG File No. 22601291

Photograph 3
Rear of the LLV.



Photograph 4
Mail side of the LLV.



September 12, 2017
RCG File No. 22601291

Photograph 5
Interior of the vehicle.



Photograph 6
Cargo area.



September 12, 2017
RCG File No. 22601291

Photograph 7

View of the interior of the engine compartment.



Photograph 8

View of the undercarriage of the vehicle.



September 12, 2017
RCG File No. 22601291

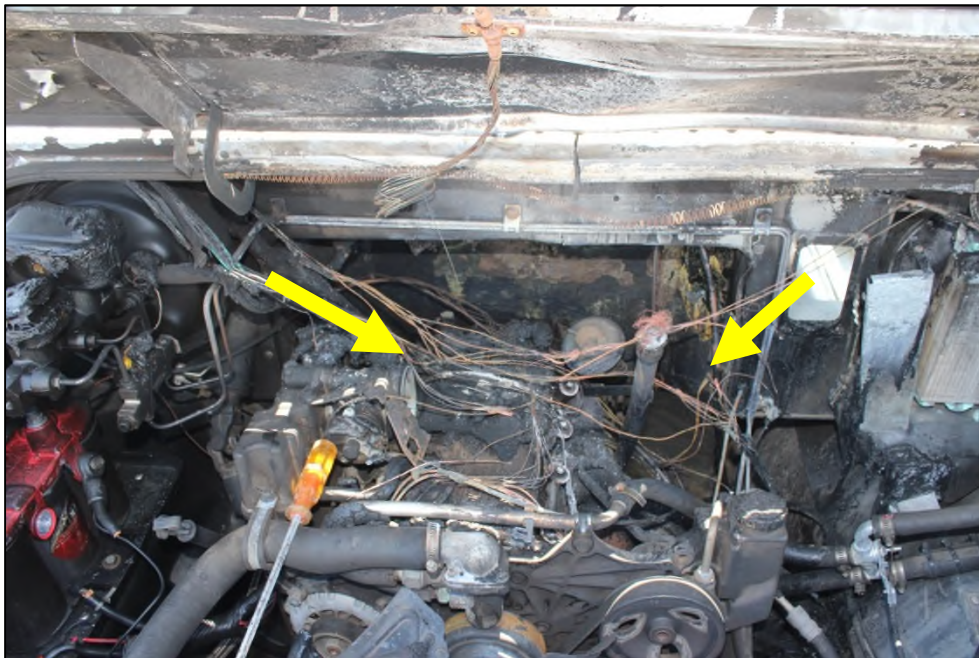
Photograph 9

View of the fire damage area of the engine compartment. View of area of origin.



Photograph 10

Area of origin, wiring did not have any indications of shorting or arcing.



September 12, 2017
RCG File No. 22601291

Photograph 11

View of the right side of the engine, with the fire and heat damage.



September 12, 2017
RCG File No. 22601291

CVs



**DENNIS N. CRANOR, IAAI-CFI
FIRE CONSULTANT**

Mr. Cranor has extensive experience in all facets of the fire service with over 30 years of municipal fire service experience. He retired from the Kansas City Fire Department as a Chief Fire Investigator after serving as a shift Firefighter, Arson Investigator, and Section Officer. Mr. Cranor is a Certified Fire Investigator (CFI) by the International Association of Arson Investigators (IAAI), a Certified Fire Investigator (CFI) by the state of Missouri and a member of the National Fire Protection Association.

Mr. Cranor's experience includes determining the origin and cause of fires in residential, commercial, industrial, as well as vehicular type fires, commercial vehicles, heavy equipment, and farm machinery. Mr. Cranor also has been trained in various facets of hazardous materials operations. Mr. Cranor has performed municipal fire inspections of residential, commercial, and industrial facilities. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blue print plan review skills regarding compliance with fire, life safety regulations, and building code compliance. Mr. Cranor has extensive knowledge in the investigation and logistical coordination of large loss fires and explosions involving commercial structures and has been called to testify as an expert witness in both District and Federal Courts. Mr. Cranor has served as Chairman and is a Founding Member of the East Kansas Multi-County Task Force. He has served on the Board of Directors and as President of the Kansas Chapter of the IAAI. Mr. Cranor is also a past Chairman of the Kansas City Arson Task Force. Mr. Cranor has spent the last 7 years conducting private fire and explosion investigations in a multi-state area.

EDUCATION AND TRAINING

Associates in Drafting Technology, Kansas City Community College, (1972)
Associates in Fire Sciences, Kansas City Community College, (1979)
Basic Law Enforcement Training, Kansas City Kansas Police Department, (1985)
Code Management, National Fire Academy, (1991)
Executive Leadership, Officers Program, and Development, National Fire Academy, (1995-96)
Kansas Chapter of IAAI, 16-20 hours Annual Continuing Education (1980-2012)
Kansas City Arson Task Force. 32 hours Annual Continuing Education (1983-2011)

ASSOCIATIONS AND CERTIFICATIONS

IAAI – CFI (Certified Fire Investigator) (Certificate Number 07-007) Past President/Board Member and recipient of the *2010 Life Member Award* of Kansas Chapter
Kansas Bureau of Investigations – Private Investigator (Number D-4566)
Missouri State Fire Marshal – CFI (Certified Fire Investigator)
Kansas City Arson Task Force – Past Chairman
Professional Fire and Fraud Investigators Association
Miami County Kansas, Fire District No.1 – Board Member/Fire Commissioner
Greater Kansas City Claims Association



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
119 Marketridge Drive, Suite H
Ridgeland, MS 39157
(877) 774-6587 Telephone
(601) 853-8303 Facsimile
Certificate of Authorization No. 00001307

September 15, 2017

Re: RCG File No:

	52206978
LLV Number:	3319608
VMF Location:	350 E. Silas Brown Street in Jackson, Mississippi
Subject:	Preliminary/Final Report

Dear

On August 7, 2017, a fire involving USPS LLV Number 3319608 occurred. The LLV was a 1994 model and the Vehicle Identification Number (VIN) was 1GBCS1040R2905781. At the time of the fire, the vehicle was located at 501 South Pear Orchard Road in Ridgeland, Mississippi. On August 9, 2017, Rimkus Consulting Group, Inc. was retained to determine the origin and cause of the fire.

Our inspection of the vehicle occurred on August 17, 2017, at the USPS Vehicle Maintenance Facility (VMF) located at 350 East Silas Brown Street in Jackson, Mississippi. In the course of our work we inspected and photographed the vehicle, reviewed maintenance and repair records, reviewed data and completed interviews. The work to complete this assignment was performed by W. Andrew Asbell, IAAI-CFI, District Manager/Fire Consultant. A technical review of this file was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association 921 – “Guide for Fire & Explosion Investigations”.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the mail side of the engine towards the rear of the engine.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of ignition of either leaking or atomized engine fluid coming in contact with the hot surface area of the components in the area of the exhaust manifold.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed in the engine compartment. Total mass loss was observed to the windshield, engine hood assembly, dashboard and multiple engine components. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size and manufacturer. There was no evidence to indicate that the brakes, wheel assemblies, or axles had failed. The fuel cap was in place and secured.

An exterior examination of the LLV originated at the front and continued in a counterclockwise direction. Exterior fire damage was mostly located along the front portion of the LLV and in proximity to the engine compartment. Exterior fire damage was observed along the hood, the front, the left front fender, and both sides. The windshield was not intact and displayed fire damage and mass loss. The tires were intact and no fire damage was observed to them.

Interior Inspection:

An interior examination of the LLV revealed physical evidence of smoke and thermal damage within the upper portion of the rear cargo compartment. Severe smoke and fire damage was observed along the dash and in proximity to the mail side of the LLV. Fire patterns and the analysis of fire dynamics revealed that the fire communicated outward from the mail side of the engine compartment and inward along the mail side of the dash and windshield opening.

Engine Compartment Inspection:

The engine compartment was examined. The 2.2 liter engine was manufactured by General Motors. Fire damage and mass loss was observed throughout the engine compartment. The most profound area of fire damage and mass loss was observed along the mail side of the engine compartment in proximity to the exhaust manifold and the bulkhead. Fire patterns communicated upward and outward from the left rear corner of the engine.

At the time of the fire, there was a single 12-volt battery mounted along the right front corner of the engine compartment. The battery displayed minor fire damage and mass loss along the upper portions. The 12-volt battery was connected to the LLV via side mount terminals. Fire damage was observed to the battery conductors, and the negative conductor had been disconnected from the battery. No physical evidence of electrical activity was observed to the battery conductors.

As a result of the fire, numerous electrical conductors and harnesses were damaged throughout the engine compartment. Physical evidence of electrical activity was observed along several small conductors located in and along the left rear portion of the compartment. In our opinion, the observed physical evidence of electrical activity was the result of the fire communicating upward from the topside of the exhaust manifold and impinging on the listed conductors.

The brake master cylinder and brake fluid reservoir were located along the right rear corner of the engine compartment. The brake lines appeared to be intact and fire damage was observed to the lines. The upper portions of the brake master cylinder and the brake fluid reservoir displayed fire damage.

The alternator was located along the right front portion of the engine. No physical evidence of electrical activity was observed to the alternator. As a result of the fire, the belt connected to the front pulley of the alternator had been mostly consumed.

The fuel lines were routed from the left rear portion of the engine compartment and downward toward the undercarriage. As a result of the fire, the flexible sections of the fuel lines had been consumed and the fuel lines were no longer intact along the upper portion of the engine.

Undercarriage Inspection:

The undercarriage of the LLV was inspected. Minor fire damage was observed along the front mail side of the engine compartment. Physical evidence of fluid leaks were observed in and along the rear of the engine housing. The involved LLV was mounted to a Chevrolet S-10 frame. The fuel filter was located along the left rear portion of the LLV and in proximity to the mail side frame rail.

Fuse Panel Inspection:

The fuse panel was located along the driver's side of the dash and in proximity to the steering column and control pedals. Minor physical evidence of fire damage was observed to the fuse panel.

Area of Fire Origin:

It is my opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated along the left rear corner of the engine, and in proximity to the topside of the exhaust manifold. The probable material first ignited was vapors produced by heated engine oil. The ignition source of the fire was heat generated from the operational engine's exhaust manifold. The specific ignition sequence and cause of the fire was the result of vapors produced from an ignitable liquid, common to the engine compartment, which was dispersed from the rear portion of the engine and ignited by the heated surface of the exhaust manifold.

Contributing Factors:

A probable engine oil leak was present at the time of the fire. Engine oil was added to the engine three days prior to the fire on August 4, 2017. A potential contributing factor is a fluid leak in the area of the engine compartment.

Evidence Collected:

No physical evidence was collected for further inspection or laboratory analysis.

Interview:

At the time of the fire, the LLV was being operated. On the date of the fire, she reportedly left from the post office and was north bound on Pear Orchard Road at approximately 12:30 P.M. As she approached the intersection of Pear Orchard Road and Lake Harbor Road, she heard a "pop" sound. Smoke was observed emitting from the engine compartment. She reportedly shut off the LLV, exited the vehicle, and observed fire coming from the left lower portion of the engine compartment. 911 was called and she awaited the arrival of fire suppression personnel from the Ridgeland Fire Department.

Service Records:

A review of the service records provided for the involved LLV was completed. The last preventative maintenance was reported to be November 18, 2016. A new battery was installed August 2, 2017. Engine oil was added on August 4, 2017.

After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

W. Andrew Asbell

W. Andrew Asbell, IAAI-CFI
District Manager/Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CV

September 15, 2017
RCG File No. 52206978

Photograph 1
Front and driver's side.



Photograph 2
Rear and driver's side.



September 15, 2017
RCG File No. 52206978

Photograph 3
Rear and mail side.



Photograph 4
Front and mail side.

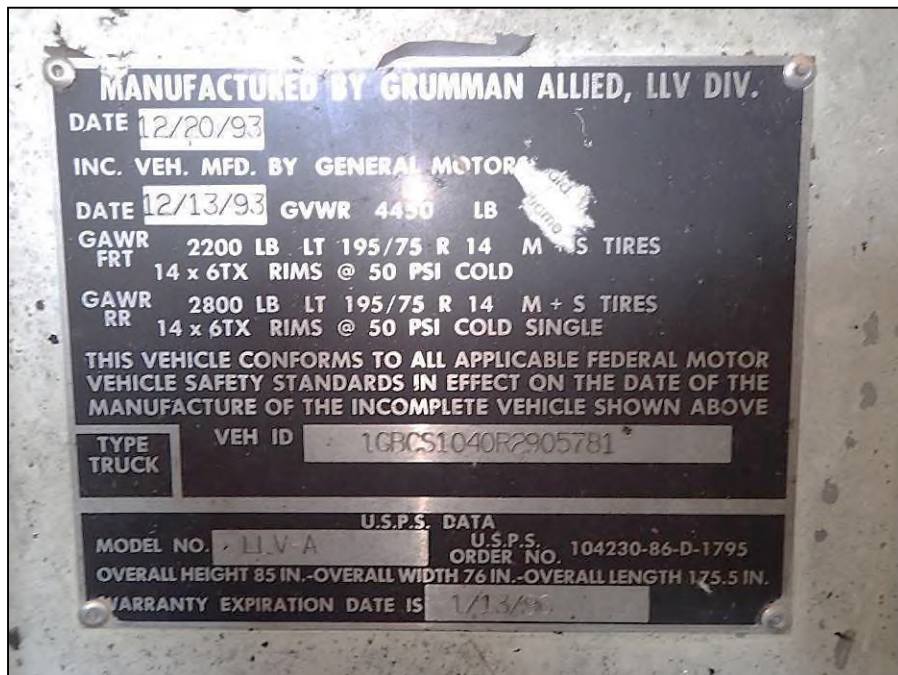


September 15, 2017
RCG File No. 52206978

Photograph 5
LLV number.



Photograph 6
Manufacturer's label.



September 15, 2017
RCG File No. 52206978

Photograph 7
Hood and windshield opening.



Photograph 8
View of the engine compartment.



Photograph 9

View of the area of fire origin.



Photograph 10

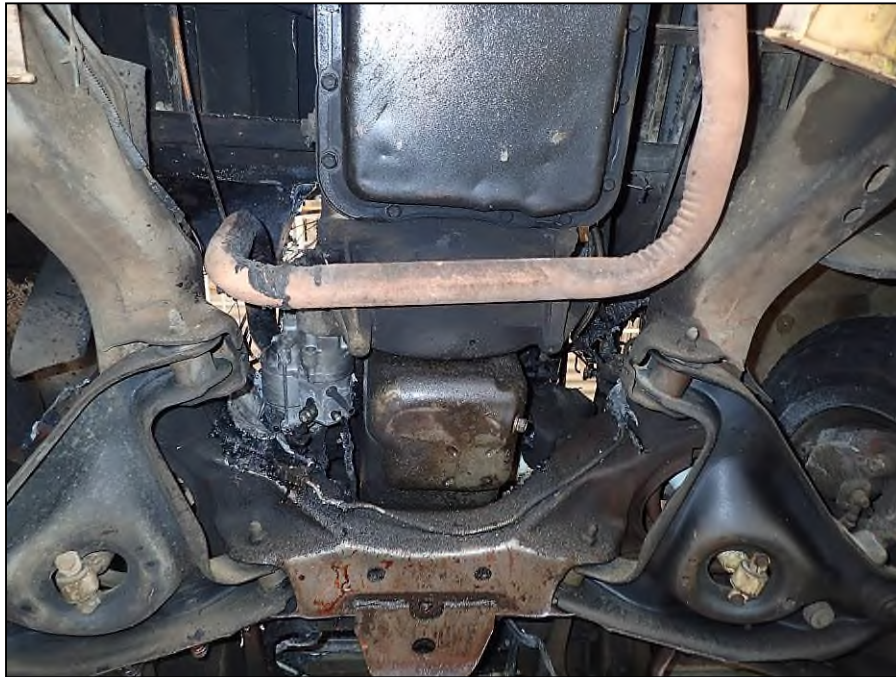
A closer view of the area of fire origin. Fire extinguisher powder was observed along the top of the manifold.



September 15, 2017
RCG File No. 52206978

Photograph 11

Undercarriage of the engine compartment.



September 15, 2017
RCG File No. 52206978

CVs



**W. ANDREW ASBELL, IAAI-CFI, CFEI, CVFI
District Manager/Fire Consultant**

Mr. Asbell is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI), and a Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators. He served as a Fire Investigator with the City of Charlotte, NC Fire Department, the City of Norfolk, VA Fire-Rescue, and as a private fire investigator where he investigated and determined the origin and cause of more than 1,100 fires and explosions to include industrial facilities, commercial and residential structures, passenger vehicles, heavy equipment, and fire-related fatalities. Mr. Asbell has completed numerous educational seminars and continuing education courses in the field of fire investigation and fire code enforcement. Mr. Asbell has testified and been qualified as an expert witness in court proceedings pertaining to fire origin and causation.

Mr. Asbell has coordinated and instructed continuing educational training programs involving the investigation of fires to public fire and police officials, insurance adjusters and investigators, and attorneys. This includes live fire training involving structures and vehicles.

In addition to his fire investigation experience, Mr. Asbell served as a firefighter, law enforcement officer, Emergency Medical Technician, and as a Nationally Registered EMT-Paramedic for over eighteen years.

EDUCATION

University of Richmond, Richmond, VA
Graduate Studies in Human Resources Management, 2006

East Carolina University, Greenville, NC
Bachelors in Science in Criminal Justice, 1999

CERTIFICATIONS & LICENSES

Certified Fire Investigator (CFI) – International Association of Arson Investigators, 2010,
Certificate # 24-031507

Certified Fire and Explosion Investigator (CFEI) – National Association of Fire Investigators, 2011

Certified Vehicle Fire Investigator (CVFI) – National Association of Fire Investigators, 2011

Private Investigator Licenses: State of Louisiana, State of Arkansas, and the State of Tennessee



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
7851 Woodland Center Boulevard
Tampa, FL 33614
(800) 498-3060 Telephone
(813) 289-5440 Facsimile
Certificate of Authorization No. 8301

October 24, 2017

Re: RCG File No:

LLV Number: 41118323
VMF Location: 4305300
Subject: 11902 N. Florida Avenue Tampa, Florida
Preliminary/Final Report

Dear

On September 26, 2017, a fire occurred to USPS LLV 4305300. The vehicle was manufactured by Grumman on 3/28/1994 with a VIN 1GBCS1049R2911384. The fire occurred during the delivery route near 34005 Hilldale Station in Tampa, Florida.

Rimkus Consulting Group, Inc. examined the LLV vehicle at the Tampa VMF located at 11902 N. Florida Avenue in Tampa, Florida on October 2, 2017.

In the course of our work, we inspected the vehicle, photographed the vehicle, and reviewed the repair and maintenance orders. The work to date was completed by National Fire Manager Thomas W. Young, IAAI-CFI (V). A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire & Explosion Investigations".

Conclusions

1. The vehicle sustained extensive fire damage to the engine and operator compartments from the fire originating within the engine compartment.
2. More specific area of fire origin was along the bulk head driver's side of the engine compartment. Within the area of the incoming fuel supply adjacent to the

Schrader valve and the two fuel injectors within this area (front to back order/ injectors 3 & 4).

3. While the specific ignition sequence wasn't immediately identified, the potential causal factors involving a fire in this area would be the fuel delivery system. The rear two injectors fuel test ports and directly below the coil where among consideration of both the fuel and heat source for this fire.
4. The rear interior storage mail/compartament was not involved with this fire.

Exterior Inspection

The driver's compartment was attacked by direct flame impingement from fire extension originating within the engine compartment. Both front tires were deflated and were burnt by advancing fire.

The rear cargo area remained intact, the rear tires were inflated with no visual damage noted.

Interior Inspection

The comfort ventilation fan for the interior typically used by the driver was lying on the floor of the interior. It was inspected and found no outward anomalies present. The service record indicated it was replaced on 8/11/16. We inspected the wiring harness at the driver's side along with wiring extending into the engine compartment. There were no adverse indications of arcing beading or other causal indicators.

The battery terminals were inspected and no anomalies were present.

Engine Compartment

The engine was described as a four-cylinder 2.2 liter gasoline engine with the mutli-port fuel injector system. The engine compartment sustained extensive damages. The localized area of loss of mass and materials combined with fire movement and intensity patterns were indicative of the fire origin being at the fuel delivery and air induction side. The central multi-port fuel injector assembly was thermally attacked by advancing fire causing deformation resulting in directional fire damage to the assembly. The fuel pressure connection remained but the Schrader valve cap was melted/consumed. The alternator, battery terminals, and battery cable remained intact with no outward indications of anomalies present. Within the area of identified origin, the injectors, coil, primary fuel supply line, and test port were considered within the sphere of fire origin.

In documenting the left side of the engine compartment, opposite from the origin area, there were notable fire damages but to a lesser degree. The flex lines for the return and fuel supply along the side of the transmission were consumed.

Undercarriage Inspection

The undercarriage inspection was performed. Fuel lines were intact along the frame rail and were not affected by the fire. The overall observation was that the fire began above the undercarriage and more specifically within the engine compartment.

Fuse Panel Inspection

The fuse panel was consumed leaving the copper trace/solder pad and the remnants of re-solidified molded plastic outer housing identifiable and only as the fuse panel it was photographed only. The respective wiring harness associated with the fuse panel was inspected and did not reveal any unexpected damages from a fire with this intensity.

It was observed that a small gauge conductor had been routed through a brake line support bracket along the bulkhead. While this installation was not factory and not considered an acceptable method of routing wiring, from all remaining indications this issue did not cause or contribute to the fire. The wire had separated and was no longer connected to its intended termination; it is unknown what this wires intended application actually was.

Area of Fire Origin

The fire originated at the fuel delivery and air induction system, the probable first fuel would be leaking fuel and/or in an atomized state. The vehicle was running during the event. With the key on, the operating fuel pressure would normally pump 41-47 psi.

The probable ignition sequence was leaking fuel coming into contact with a suitable ignition source such as the alternator, loose or faulty spark plug wires, or other hot surface components.

The fire pattern analysis revealed localized directional degradation caused by the fire originating within the engine compartment on the driver's side at the fuel delivery and air induction system.

Contributing Factors

Given the predominant area of damage, the cause would be indicative of a fuel related fire. Located at the lower intake manifold assembly was the coil which from review of the service records had been replaced 1/30/17.

Within the determined area of fire origin, gasoline having a flammable range of 1.4% to 7.6% and an ignition temperature of -45C /113F, many potential sources could be considered possible such as the alternator, loose or defective spark plug wires, and other hot components.

Other possible contributing factors related to injectors are worn “O” rings, loose injector retainer brackets. In addition, other considerations such as loose fuel supply fittings, a loose Schrader valve or defective components at the test port. We did not see any recent injector service or replacement on the records provided to us. There was a service for “out of gas” on 8/11/17 and a “no start” on 8/04/17. A replaced vacuum line was replaced at this time.

Evidence Collected:

There were specific artifacts of interest inspected closely. Most components were no longer connected by their respective circuits or support brackets. The remaining condition of the components within the area of fire origin would unlikely reveal any relevant data from testing the remnants.

There was no evidence collected at this juncture.

Interview:

On Friday October 13, 2017, a telephone conference was conducted with the carrier.

- She had a trainee following her on the route on the day of the fire. At the time of the fire, they had one more tray of mail to deliver but were running behind schedule.
- Pre-fire around 3:00-3:25 P.M., while on the route, she pulled the truck over to look underneath the vehicle. She said it had been losing power and she thought she was dragging something.
- When she stopped the trainee ran up to tell her the vehicle was on fire.
- Moments before the fire and she came to the stop she noticed the vehicle became hard to steer. There were no other indicators of a problem other than a loss of power, the harder she pushed on the gas the slower it went. No reported abnormal odors and had no other indications of any operability issues with the vehicle.

Service Records:

The most current service records were obtained and reviewed,

- 01/30/17 IGNITION COIL,IGNITION MODULE REPLACED
- 08/04/17 “NO START ROAD CALL” - fixed vacuum leak

- 08/11/17 “OUT OF GAS” “stalls” – found out of gas

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Thomas W. Young

Thomas W. Young, IAAI-CFI (V)
VP Fire Division

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

October 24, 2017
RCG File No. 41118323

Photograph 1

Front view of the vehicle.



Photograph 2

Rear view of the vehicle.



October 24, 2017
RCG File No. 41118323

Photograph 3
Origin exemplar vehicle.



Photograph 4
Close view origin.



October 24, 2017
RCG File No. 41118323

Photograph 5
Top view of origin.

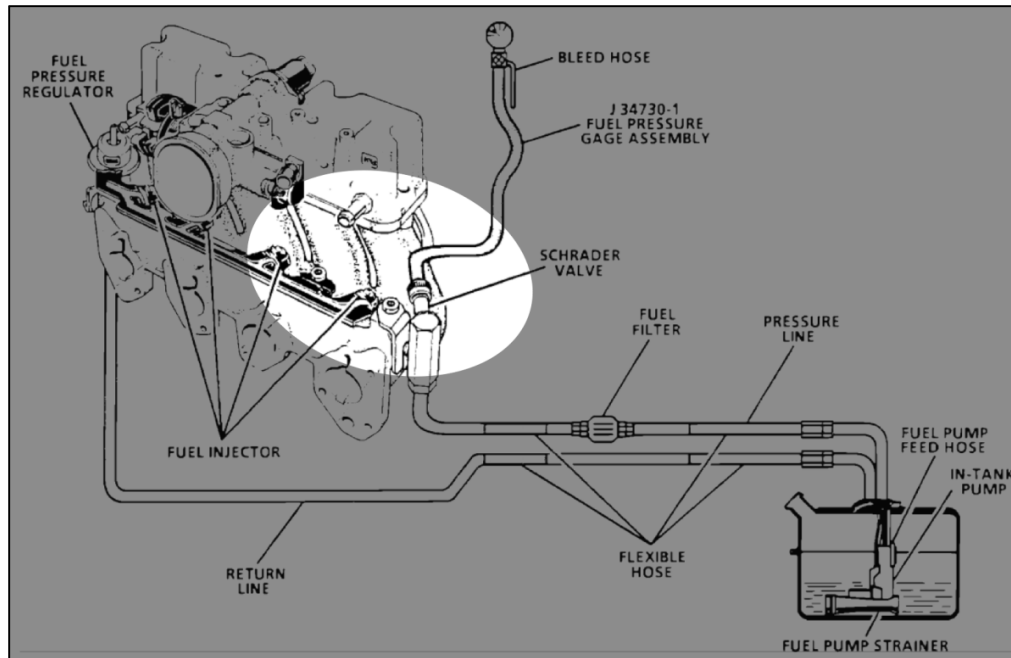


October 24, 2017
RCG File No. 41118323

Photograph 6
Highlighted origin.



Photograph 7
Highlighted area of origin.



Photograph 8
Improper wire routing.



October 24, 2017
RCG File No. 41118323

Photograph 9
Artifacts from area of origin.



October 24, 2017
RCG File No. 41118323

CVs



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



**THOMAS W. YOUNG, I.A.A.I., C.F.I., C.F.E.I., C.F.I.I.
NATIONAL FIRE DIVISION MANAGER**

Mr. Young's professional career includes 27 years with St. Petersburg Fire and Rescue. In that capacity he has been involved in many different emergency service positions including Fire Fighter, Driver Engineer, Station/Line Officer, Public Information Officer, Community Affairs Director, Deputy Fire Marshal and Fire Investigations Task Force Supervisor. As a Florida State Certified Fire Inspector he oversees code compliance, crowd management, fire safety analysis, special events, safety management, commercial and industrial fire emergency operations and reviewing fire contingency plans.

Mr. Young has completed and maintains state national and international certifications as Fire Investigator, Fire Investigator Instructor, Fire Inspector, Fire Officer, and Basic Fire Instructor. He has also authored articles in fire engineering publications, as well as firehouse and local municipality newsletters. Furthermore, he participates in, designs, and instructs educational seminars and continuing educational courses. Moreover, he has conducted Live Burn Testing to include appliances, vehicles, and closed room fire tests and studies.

Mr. Young supervised the cause and origin efforts for the St. Petersburg Fire and Rescue for over 10 years. He has testified as an expert witness in court cases and has testified before the Grand Jury. He has also been involved in special projects such as juvenile fire setters, an educational intervention program that he developed. Additionally, he has served as the department's shipboard firefighting instructor. He has a strong marine investigative background.

Mr. Young has been recognized for his achievements by being the recipient of awards that include, Fire Officer of the Year, and The State of Florida's, Florida Fire Marshals Public Educator of the Year.

As division manager Mr. Young oversees the fire investigation efforts, which include training, hiring, and supervising a team of highly trained and experienced fire consultants with Rimkus Consulting Group, Inc.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.S. - Fire Science, St Petersburg College, St. Petersburg, Florida (1999)
Certified Fire Investigator - International Association of Arson Investigators (2004)
Certified Fire and Explosion Investigator - National Association of Fire Investigators (2001)
Florida State Certified Fire Safety Inspector (since 1989)
Florida State Certified Fire Officer (since 1989)
Nationally Certified Fire Investigator Instructor (2001)
Certified Fire Investigator Instructor - National Association of Fire Investigators
Florida State Certified Fire Service Instructor (since 1989)
Computer Fire Modeling - National Association of Fire Investigators (2003)
University of Florida, Fire Marshal Association of North America Fire Protection Institute Training
U.S. Department of Transportation Maritime Administration/Shipboard Firefighting
Member of NSPII – National Society of Professional Insurance Investigators
National Fire Protection Association Member
National Fire Academy - Designing Life Safety Strategies & Curriculum Development
Florida Fire Marshals Association
Florida Advisory Committee on Arson Prevention Member and Annual Conference Attendee
Fire Findings Laboratories/Gas and Electric Appliance Fires (2009)
I.A.A.I. Florida Chapter Regional Director (PAST)
Forensic X-Ray Equipment Certified and Equipment Safety Manager – Golden Engineering (2006)
National Board of Fire Service Professional Qualifications 1033 NFPA
I.A.A.I. Annual Conference – Orlando (2010)
Diversified Fire Training Code Compliance (2010)
Currently maintains Private Investigator agency licensing for all required states in the Eastern Region
I.A.A.I. Annual Conference – Las Vegas (2011)
Litigation Seminar National Association of Fire Investigation (2011)
Automotive Repair Technician Certification – Penn Foster College Fall (2012)
I.A.A.I. Annual Conference – Orlando (2013)



Rimkus Consulting Group, Inc.
5099 Commercial Circle, Suite 100
Concord, CA 94520
(925) 677-7439 Telephone
(925) 677-7445 Facsimile

August 18, 2017

Re: RCG File No:

LLV Number: 01906299
VMF Location: 8201153
Subject: 1750 Lundy Avenue in San Jose, California
Preliminary/Final Report of Findings

Dear

On August 1, 2017, a fire occurred involving a USPS LLV 8201153. The loss location was reported as 1122 Wave Place in San Jose, California. LLV 8201153 was examined at the VMF located at 1750 Lundy Avenue in San Jose, California.

Rimkus Consulting Group, Inc. was retained to examine the 1988 Chevrolet LLV 8201153, VIN 1GBBS10E7J2306367, to determine the cause of the fire. During our investigation, we conducted an examination of the fire damaged LLV, reviewed the written statement of carrier/driver Mr. Bill Sukovaty, and documented the vehicle with photographs. The vehicle examination was conducted by Fire Consultant Jimmie McCants, CFEI, on August 10, 2017. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator's compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the ignition switch positioned in the right side of the dashboard and steering wheel column.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the ignition switch within the steering column which heated and ignited surrounding combustible material.

Discussion

Exterior Inspection:

Examination of the vehicle began at the front of the vehicle and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The vehicle sustained no visible exterior fire damage.

Interior Inspection:

The operator's compartment sustained no interior fire damage, except to the ignition switch on the steering column which was loosened for inspection prior to our examination. The fire damaged steering column was destructively examined in the VMF facility parking lot.

The rear cargo area, both side doors, and all four tires were intact. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

There was no fire damage to the cargo area.

Steering Column Inspection:

The steering column had been loosened so that access could be made to the ignition switch.

Engine Compartment Inspection:

The engine compartment was examined. No fire or heat damage was observed. The fuel filter was intact and located along the rear of the engine near the mail side of the transmission. The fuel system was examined and found to be intact and observed with no fire damage. The fuel filter was observed with no fire damage. The fuel system was the GM model. The battery for the vehicle was located at the front right side of the engine compartment and had no fire damage. The engine oil and transmission fluid were examined and observed to be within their normal operating range.

An examination of the engine block was conducted. No fire damage was observed to the engine block. No internal failures of the engine were observed. The battery terminal ends were disconnected from the battery to make sure no other fires occurred. The LLV was equipped with a 2.5L, four-cylinder gas engine.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of fire damage along the bottom side of the engine as well as the sides of the engine. The involved LLV was mounted on a GM frame. The fuel lines were examined and it appeared the lines had failed during the fire progression. The fuel tank was examined and the vehicle fuel filter system was equipped with a GM filter. Both were free of fire damage. The exhaust system was intact and the transmission did not reveal any leaks. The vehicle sustained no visible undercarriage fire damage.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained no fire damage. All fuses were intact and no blown fuses were observed.

Area of Fire Origin:

Examination of the area of origin, located within the ignition switch on top of the steering column, revealed a small area of fire damage to the switch. Our examination of the wiring revealed a single wire (hot wire from battery) had been severely damaged and revealed adverse electrical activity on the spade connector of the wire. We removed the ignition switch from the steering column and observed fire damage to the switch in the area of where the spade connector connected to a metal connector attached to the ignition switch. The switch was melted and slightly burned. The quick action of the postal carrier extinguished the fire causing minimal damage to the LLV.

Contributing Factors:

Age of the switch may have contributed to the failure of the ignition switch.

Interviews:

It was reported by the carrier that he was sitting in the LLV when he started to smell smoke and then saw flames under the dash. He used his water bottle to extinguish the fire when it was very small in size.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jimmie L. McCants, II

Jimmie L. McCants II, NAFI - CFEI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

August 18, 2017
RCG File No. 01906299

Photograph 1
LLV 8201153.



Photograph 2
Rear of LLV.



August 18, 2017
RCG File No. 01906299

Photograph 3
Front of LLV.



Photograph 4
Engine Compartment.



Photograph 5

Driver's Seat, steering column and dashboard area.



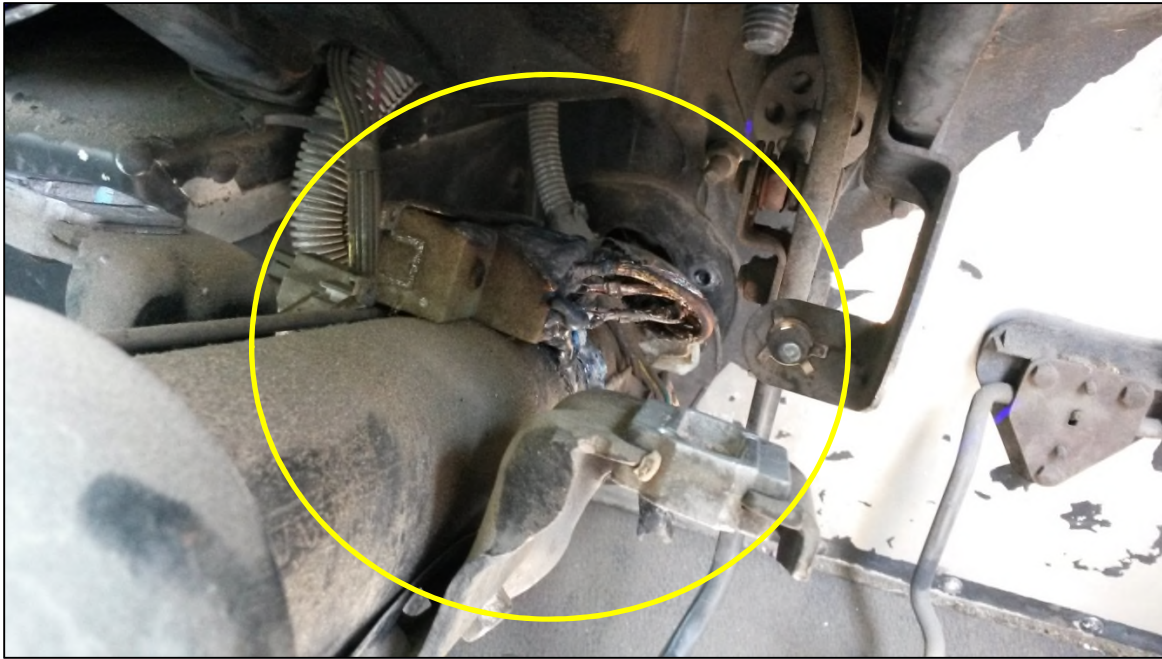
Photograph 6

The ignition switch and wiring harness, observe the damage to the wiring harness at the connection terminals.



Photograph 7

The steering column and the ignition switch.



Photograph 8

A close up of the wiring connection terminals and the point of fire origin.



August 18, 2017
RCG File No. 01906299

CVs



**JIMMIE McCANTS, IAAI, CFEI
FIRE CONSULTANT**

Mr. McCants is a Certified Fire and Explosion Investigator and a licensed private investigator in California. With 22 years of fire investigation experience and 26 years of law enforcement experience he is uniquely qualified to work the most complex fire losses. He has investigated over 1,000 fires during his long career. He was assigned as a lead investigator for a multi-county fire investigation unit in California. Mr. McCants has investigated several fatal fires as well as numerous high profile fires and bombing incidents throughout northern California. He is well versed in taking statements and in the warning signs of arson and possible insurance fraud cases.

As a prior detective Mr. McCants is well versed in collecting and preserving evidence. His structural fire and explosion experience on scene for various types of occupancies has given him working knowledge of building construction, fire behavior, and post investigation techniques for analyzing damage assessment and fire cause and origin.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire and Explosion Investigator, National Association of Fire Investigators 2012
Certified Arson / Explosive Investigator, Robert Pressley Institute of Criminal Investigations 1999
Associates of Sciences degree Solano Community College, 2000

EMPLOYMENT HISTORY

2013 – Present	Rimkus Consulting Group, Inc.
2011 – 2013	G4S Compliance and Investigations, part-time fire investigator
1985 – 2011	Solano County Sheriff's Office



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
560 Southwest 12th Avenue
Deerfield Beach, FL 33442
(800) 861-7644 Telephone
(954) 428-1849 Facsimile
Certificate of Authorization No. 8301

October 17, 2017

Re: RCG File No:

LLV Number: 41422956
VMF Location: 8206799
Subject: 2250 NW 72nd Avenue Miami, Florida
Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was requested to examine the vehicle fire loss involving a USPS 1988 LLV 8206799 that occurred in Miami, Florida on September 19, 2017. In the course of the work, we examined and documented the fire damaged vehicle on September 25, 2017.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 2250 NW 72nd Avenue in Miami, Florida. The work to complete this assignment was performed by Fire Consultant Alexander F. Kapczynski, IAAI-CFI. This report and case was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 – "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the vehicle.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination, however the progression of

the fire extended from the left rear area of the engine compartment and progressed upward and outward from this location.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of an engine fluid leak (IE: fuel, oil, transmission fluid) onto a hot engine surface as the possible cause of the fire.

Observations

Exterior Inspection:

The exterior examination of the fire damaged vehicle commenced from the front of the LLV and continued in a clockwise rotation. The fire damaged vehicle was found inside a bay of the VMF. The inspection revealed that the vehicle sustained severe fire damage throughout the LLV. Fire patterns indicated that the fire originated within the engine compartment and spread towards the rear of the vehicle. The left side of the vehicle sustained greater damage as compared to the right side or driver's side. The chassis and frame of the vehicle sustained severe damage and a large portion of the aluminum body had been consumed by the fire.

Interior Inspection:

The interior inspection revealed severe fire damage in the driver's compartment and the cargo compartment. The vehicle's identification plate was missing and the VIN could not be confirmed. Reportedly, a large quantity of fire damaged mail was removed from the remains of the LLV by the postal inspector prior to our on-site inspection. The remnants of the fire-damaged mail were placed into black plastic bags and placed beside the fire damaged LLV.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. The engine compartment sustained severe damage and the fire appeared to have lasted an extended period of time before being extinguished. Examination of the engine compartment revealed severe fire damage throughout the compartment.

The vehicle was equipped with a GM 2.2L, four-cylinder gasoline engine. The damage was most severe to the left rear area of the engine compartment. The brake booster positioned on the right rear bulkhead sustained fire and heat damage. The brake fluid reservoir had been partially damaged by the heat from the fire.

The wiring harness sustained severe fire and heat damage. The insulation had been consumed. The alternator sustained minor heat damage. The insulation had not been consumed from the conductors to the alternator. The main conductor was secure with no evidence of adverse electrical activity. The auxiliary conductor was secure. The top of the battery case had sustained fire and heat damage. The conductors and terminals had been detached from the battery by the fire suppression crew. The negative conductor was attached to the frame and to the block. The main positive conductor was attached to the starter. The insulation had been consumed and displayed no evidence of adverse electrical activity. The fuel rail had sustained severe fire damage. The injectors sustained severe damage but were intact. The fuel lines had sustained severe fire damage and mass loss.

The power steering unit positioned at the left front of the engine sustained severe damage. The flexible return line and reservoir was in its correct position. The upper radiator hose sustained heat damage. The flexible section of the vapor return line from the fuel tank to the canister mounted in the grill was damaged by fire. The flexible section from the canister to the solenoid at the rear of the throttle body had been consumed.

The starter was undamaged by the fire and the conductors were secure. The insulation had been consumed on the conductors routed across the engine from the battery to the starter. The remains of the battery were positioned on the right side of the engine compartment. The positive and negative large conductors that had been connected to the battery were present and displayed no evidence of adverse electrical activity.

Examination of the engine fluid levels was within factory recommendation limits. Examination of the transmission fluid level revealed the transmission fluid was within factory recommendation limits.

Examination of the engine was conducted, and no cracks or holes were observed within the engine or engine block. The engine block was intact and there was no evidence of pistons piercing the engine block.

Our examination revealed what appeared to be a metal air filter canister, that had been disconnected from the inside wall of the engine compartment. The metal canister was severely damaged by fire.

The remaining wiring harness was examined and no evidence of adverse electrical activity was observed.

Fire patterns indicated that the fire originated near the rear left side of the engine block. The fuel filter had been positioned on the left side of the engine compartment and in the area where the most damage was observed. The fuel filter was severed from its original position and found near the front radiator.

Undercarriage Inspection:

The fire damaged two front tires and left rear tire were removed and replacement tires were installed in order to move the fire-damaged LLV to a lift. The undercarriage was inspected and fire patterns found along the undercarriage revealed that the fire traveled from the front of the vehicle towards the rear. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel normally positioned in the driver's compartment below the steering column was consumed by the fire and could not be examined.

Area of Fire Origin:

Fire patterns indicated that the fire originated within the engine compartment and spread towards the rear of the vehicle. The path of fire travel was determined to have originated on the rear left side of the engine compartment and traveled towards the right side of the cargo compartment.

Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination. We could not eliminate the possibility of an engine fluid leak (IE: fuel, oil, power steering fluid, transmission fluid, etc.) onto a hot engine surface as the possible cause of the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. The last scheduled service was completed in March, 2017. After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Evidence Collected:

No evidence was collected.

Interview:

An interview was not conducted with the carrier who was operating the LLV at the time of the fire. Multiple phone calls were placed to the Mr. stating who we were and that we needed to speak with the carrier regarding the fire event. Additional emails and phone calls have been made to contact the carrier. Technical Fire Manager was advised of the situation and placed a request for the carrier to call us regarding the fire. As of the date of this report, no phone call or email correspondence has been received from the carrier.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Alexander F. Kapczynski

Alexander F. Kapczynski, IAAI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

October 17, 2017
RCG File No. 41422956

Photograph 1

View of the fire-damaged LLV as found in the VMF located in Miami, Florida.



Photograph 2

View of the left side of fire-damaged LLV 8206799 after replacement wheels were installed to assist in moving the vehicle to a lift.



October 17, 2017
RCG File No. 41422956

Photograph 3

View of the driver's side of fire damaged LLV 8206799.



Photograph 4

View of left, front side of the fire-damaged vehicle. The severed fuel filter was found towards the front of the engine compartment near the radiator.



Photograph 5

View of the fuel filter.



Photograph 6

View of the undercarriage looking towards the front left side of the vehicle where the fuel filter had been positioned.



October 17, 2017
RCG File No. 41422956

CVs



**ALEXANDER F. KAPCZYNSKI, IAAI-CFI
FIRE CONSULTANT**

Mr. Kapczynski is a Certified Fire Investigator with the International Association of Arson Investigators (IAAI-CFI), the National Board of Fire Service Professional Qualifications and a New York State Certified Level II Fire Investigator with the New York State Office of Fire Prevention and Control. Mr. Kapczynski is a licensed private investigator in the State of Florida. He served in the City of Albany Fire Department for over twenty one years and was a Lieutenant in the City of Albany's Fire Investigation Unit (FIU) for approximately four years. As a member of the FIU, Mr. Kapczynski investigated and determined the origin and cause involving commercial structures, residential structures and vehicles. Mr. Kapczynski has testified on multiple occasions in criminal proceedings pursuant to his duties as a fire investigator.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

City of Albany Fire Department, Albany, New York
Firefighter Essentials, 1992

Hudson Valley Community College, Troy, New York
Emergency Medical Technician Paramedic Level, 1996

Corning Community College, Corning, New York
Associates Degree, Fire Protection Technology, 1997

New York State Fire Academy, Montour Falls, New York
Hazardous Materials Specialist Training, 1998

New York State Fire Academy, Montour Falls, New York
Fire Behavior & Principles of Fire Investigation, 2007

New York State Fire Academy, Montour Falls, New York
Fire Arson Investigation, 2007

International Association of Arson Investigators, Rutland, Vermont
Advanced Fire Investigation Techniques Seminar, 2008

New York State Fire Academy, Montour Falls, New York
Electrical Cause Determination I & II, 2009

International Association of Arson Investigators, Charlotte, North Carolina
Expert Report Writing, 2010

New York State Fire Investigators & ATF, Colonie, New York
Arc Mapping Seminar, 2010



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
7501 South Quincy Street, Suite 160
Willowbrook, IL 60527
(866) 746-5871 Telephone
(630) 321-1847 Facsimile

September 1, 2017

Re: RCG File No:

	50905020
LLV#	8209172
VMF Location:	7500 W. Roosevelt Road in Forest Park, Illinois
Subject:	Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 8209172, VIN 1GBBS10E5J2314466. The vehicle was examined at the USPS Chicago NDC VMF located at 7500 W. Roosevelt Road in Forest Park, Illinois. The fire incident reportedly occurred in the 3100 block of Cara Lane in Oak Brook, Illinois on August 11, 2017.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on August 28, 2017. Our work to complete this assignment was performed by Fire Consultant David A. Mager, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the vehicle.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of the wear and degradation of fuel system components which could have allowed an adverse event to develop on the top side of engine within the engine compartment as the possible cause of the fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. There was slight smoke staining to the hood of the engine compartment on the driver's side near the windshield. No other fire damage was found on the exterior of the vehicle.

Interior Inspection:

Examination of the interior of the vehicle revealed no fire damage. The fire damaged remains of a fuel injector, air filter, and air filter housing were on the mail tray. The throttle body had been removed from the engine and placed on the mail tray. There was a new throttle body gasket and fuel injector still in their packaging on the mail tray.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine. The throttle body and air filter housing had been removed and placed on the mail tray. There was a shop towel over the top of the intake manifold where the throttle body had been. There was some melting of plastics around the area of the top of the engine. There was smoke staining and melted plastic on the underside of the hood above the top of the engine. All of the electrical connection and rubber vacuum hoses were undamaged. It was later determined through interviews that the fire damaged electrical connections and vacuum hoses had been replaced prior to our inspection and discarded.

The battery for the vehicle was located at the front right side of the engine compartment. The battery, the battery terminals and battery cables were examined and found to be undamaged and intact, no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid, and brake fluid were examined and observed to be within their normal operating range.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM frame that was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact.

Fuse Panel Inspection:

Examination of the fuse panel revealed no fire damage to the panel and all of the fuses.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence it was determined that the fire originated at the throttle body on the top of the engine.

Contributing Factors:

The LLV was parked and not operating at the time of the fire. The carrier stated that he was trying to start the vehicle when he heard a loud "pop". A few minutes later he saw smoke coming from the engine compartment. The carrier opened the hood and saw flames around the bottom of the air filter housing.

Evidence Collected:

No evidence was collected for laboratory examination.

Interviews:

In a phone interview with the carrier stated that he had made about 50 stops on his route prior to the fire. Mr. stated that he must turn the vehicle off at every stop when he gets out of the vehicle. The vehicle was hard starting after every stop. The last stop where the fire occurred, the vehicle would not start. Mr. said that he called the VMF and that Mr. gave him a few things to try to get it started. After the vehicle would not start, Mr. said that he called the office to let them know the vehicle would not start. While on the phone with the office, he attempted to start the vehicle one last time. Mr. heard a loud "pop" and the engine did not start. He hung up the phone with the office and shortly thereafter saw smoke coming from the engine compartment. He opened the hood and saw flames around the air filter housing and called 911.

In an interview with , Mr. stated that he was the mechanic that was working on the vehicle when he was instructed to stop work until the vehicle was inspected by the fire investigator. Mr. stated that he had already replaced the

fire damaged vacuum hoses and electrical connector on the vehicle. Mr. said that he had disposed of the fire damaged parts with the exception of the fuel injector. Mr. said that the electrical connector and the top of the fuel injector were melted together and that he had to pry them apart. He said that the electrical conductors for the fuel injector were not damaged and only replaced the connector.

Service Records:

A review of the provided service records for the involved LLV was conducted. The last scheduled service was completed on May 15, 2017. After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Mager

David A. Mager, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

September 1, 2017
RCG File No. 50905020

Photograph 1

1988 General Motors LLV-A 8209172, VIN 1GBBS10E5J2314466.



Photograph 2

Driver's side of the vehicle.



September 1, 2017
RCG File No. 50905020

Photograph 3

Mail side of the vehicle.



Photograph 4

Interior drive's side.



September 1, 2017
RCG File No. 50905020

Photograph 5
Cargo area.



Photograph 6
Mail tray.



September 1, 2017
RCG File No. 50905020

Photograph 7
Engine compartment.



Photograph 8
Fire damaged fuel injector.



September 1, 2017
RCG File No. 50905020

CVs



DAVID A. MAGER, CFI FIRE CONSULTANT

Mr. Mager is an International Association of Arson Investigators Certified Fire Investigator, Illinois State Fire Marshall Office Certified Fire Investigator, Certified Fire Officer II, Hazardous Materials Technician "B" and a Illinois Department of Public Health Certified Paramedic.

Mr. Mager has an extensive professional background in the areas of firefighting and fire investigations, and has investigated over five hundred fires. His professional experience includes fire and explosion investigations, fire protection and detection system inspections as well as hazardous materials mitigations.

As an International Association of Arson Investigators Certified Instructor and a Certified Instructor II through the Illinois State Fire Marshall Office, Mr. Mager has conducted numerous live fire training exercises for Fire Fighters and Fire Investigators using authentic room furnishings as well as classes on fire behavior and evidence preservation.

Mr. Mager is a Retired Deputy Fire Chief and had been the Training Officer with the Midlothian, IL. Fire Department. He was an Assistant Team Leader for the Southwest Hazardous Materials Response Team and routinely responded to fire and hazardous materials incidents, fire investigations and conducted life safety inspections within the municipality.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator - Illinois State Fire Marshall Office
Certified Fire Investigator - International Association of Arson Investigators
Certified Instructor – International Association of Arson Investigators
Certified Fire Officer II – Illinois State Fire Marshall Office
Certified Hazardous Materials Technician "B" - Illinois State Fire Marshall Office
Certified Fire Department Incident Safety Officer – Illinois State Fire Marshall Office
International Association of Arson Investigators – Member
International Association of Arson Investigators (Illinois Chapter) – Member

EMPLOYMENT HISTORY

2008 – Present	Rimkus Consulting Group, Inc.
1987 – 2015	Midlothian Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
3620 Horizon Drive, Suite 200
King of Prussia, PA 19406
(888) 623-1460 Telephone
(610) 941-1288 Facsimile

March 3, 2016

Re: RCG File No: 47701763
LLV Number: 0202171
VMF Location: 147 Quigley Blvd in New Castle, Delaware
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 0202171, VIN 1GBCS10E9M2901651. The vehicle was examined at the USPS Wilmington VMF located at 147 Quigley Blvd in New Castle, Delaware. The fire incident reportedly occurred on Route 9 in Lewes, Delaware on January 7, 2016.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on January 11, 2016. Our work to complete this assignment was performed by Fire Consultant Jonathan Sivils, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the interior operator compartment of the involved LLV.
2. The specific area of fire origin was determined to be within the dashboard at and around the headlamp switch.

3. Melting damage was also observed under the dashboard at the high beam connector from what appeared to be a loose connector.
4. The specific ignition sequence and cause of the fire was determined to be a direct result of heating at the rheostat switch from the dimmer on the headlamp switch. There also appeared to be issues with the wiring configuration to the connector.
5. The headlamp switch and high/low beam had been repaired by a third party vendor just prior to the fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. Minor smoke staining is visible in the center of the windshield. All remaining sides of the vehicle revealed no fire damage.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred to the middle top of the dashboard area. The plastic material in the left side of the dashboard had melted at the headlamp switch. The electrical wiring was examined and did not display any signs of adverse electrical activity. Examination of the headlamp switch components revealed the switch was melted and revealed signs of overheating. Examination of the electrical wiring that transverse behind the dashboard were examined and revealed no signs of obvious failure. Further inspection of the headlamp switch assembly revealed the high/low beam switch located under the steering wheel had minor burn marks on the electrical prongs in the wiring harness. The switch was also examined and revealed minor burning to the switch components where the wiring harness connected.

Engine Compartment Inspection:

The engine compartment was examined. No fire damage was noted. The fuel system was examined and found to be intact with no damage noted. The fuel filter was intact and located along rear of the engine near the fire wall. The fuel system was a GM model. The battery for the vehicle was located at the front right side of the engine compartment and had no fire damage. Based on the fire patterns, the engine compartment was not the area of origin.

Undercarriage Inspection:

Examination of the undercarriage revealed no damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks

Fuse Panel Inspection:

Examination of the fuse panel revealed four 20 amp fuses were removed prior to the inspection and located on the floor of the vehicle. None of the fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the left side of the dashboard area of the vehicle. The specific area of origin is the headlamp switch.

Contributing Factors:

Issues with the headlamp switch and high/low beam switch that was routed in the area of origin could not be eliminated. The involved components were collected and sent to Jack Kennedy, III, in the Charlotte, North Carolina office for analysis.

Evidence Collected:

Exhibit A: Headlamps switch assembly and associated wiring.

Exhibit B: High/low beam switch and associated wiring.

The collected evidence was examined in the lab. The high beam switch damage was not the cause of the fire in this case. However, it showed signs of melting due to a loose connection which would have resulted in a fire at some point.

The headlamp switch was examined and a failure due to resistive heating at the rheostat switch from the dimmer was determined to be the cause of the fire damage. There is also some question as to the wiring connections not being installed appropriately.

Interviews:

On January 11, 2016, an interview via telephone was conducted with the driver of the vehicle at the time of the fire. He reported the following information:

- He was driving the vehicle to his shop because it kept stalling while out on route.

- While driving the vehicle to the shop, he noticed it only had high beams.
- While the vehicle was in the shop, he replaced the dimmer switch and all headlights were operational. However, only half of the dash board lights worked.
- On the day of the fire he was returning the vehicle to the post office. While driving, he smelled smoke and noticed smoke coming from the headlamp switch. He pulled the vehicle over to the side of the road and removed numerous fuses. He pushed the headlamp light switch in to turn them off and the switch fell into the dashboard and flames came out.
- He flagged a truck driver down and was able to extinguish the flames with a fire extinguisher.

Service Records:

A review of the service records indicated that the last recorded mileage was 231,887. Just prior to the fire, the vehicle had been repaired by Hazzards Auto, a third party vendor, at which time work was done to the headlamp switch and high beam dimmer switch. The work was a direct contributor to the cause of the fire. The evidence was also examined by USPS Engineers while in Charlotte, NC.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jonathan K. Sivils

Jonathan K. Sivils, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 3, 2016
RCG File No. 47701763

Photograph 1

Front of vehicle. Minor smoke stains in middle of window.



Photograph 2

Rear of vehicle.



March 3, 2016
RCG File No. 47701763

Photograph 3

Engine compartment. No fire damage.



Photograph 4

Interior of vehicle.



March 3, 2016
RCG File No. 47701763

Photograph 5

Dashboard area. Fire damage to left top side.



Photograph 5

Headlamp switch.



March 3, 2016
RCG File No. 47701763

Photograph 6
Headlamp switch.



March 3, 2016
RCG File No. 47701763

Photograph 7

Headlamp switch. Electrical conductors on back of switch.



Photograph 8

High/low beam switch.



March 3, 2016
RCG File No. 47701763

Photograph 9
High/low beam switch.



Photograph 10
High/low beam wiring harness.



March 3, 2016
RCG File No. 47701763

Photograph 11

Evidence collected.



March 3, 2016
RCG File No. 47701763

CVs



Jonathan Sivils, IAAI-CFI, FIT, CFEI Fire Consultant

Mr. Sivils is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, as well as a Fire Investigation Technician (IAAI-FIT) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). He also holds an Associate of Science Degree in Fire Protection Technology. In a career spanning more than 25 years in the fire service, he has investigated and determined the origin and cause of more than 800 fires, to include commercial structures, residential structures, vehicles, marine and heavy equipment. He has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Sivils is a court-qualified expert witness in Criminal and Civil proceedings. Mr. Sivils has extensive training in fire and criminal investigations.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S Fire Protection Technology – Americus University, Washington D.C. – 2002
Bucks County Fire Chiefs and Firefighters Association
Bucks County Fire Marshal Association
International Association of Arson Investigators
National Association of Fire Investigators
National Fire Protection Association
Pennsylvania Association of Arson Investigators

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2012 – 2015	Donan Engineering Company, Inc.
2007 – 2012	Bucks county Fire Marshal Office, Bucks County, Pa
2005 – 2007	U.S. Department Of Defense Fire and Emergency Services
2009 – 2010	NEFCO Fire Investigations, Philadelphia, Pa
2003 – 2005	U.S. Department of Homeland Security
1998 – 2003	U.S. Department Of Defense Fire and Emergency Services
1993 – 2010	Penndel Fire Company, Penndel, Pa



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
92 South Street
Hopkinton, Massachusetts 01748
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

March 6, 2019

Re: RCG File No: 44804156
LLV No: 0203120
VMF Location: 330 Cochituate Road Framingham, Massachusetts
Subject: Preliminary/Final Report

Dear

On January 22, 2019, a fire involving LLV 0203120, VIN 1GBCS10E5M2902621 occurred. At the time of the fire, the vehicle was located in the driveway of 618 Sudbury Street in Marlborough, Massachusetts.

On January 25, 2019, Rimkus Consulting Group, Inc. was retained to examine LLV 0203120. Our inspection of the vehicle occurred on January 28, 2019, at the Vehicle Maintenance Facility located at 330 Cochituate Road in Framingham, Massachusetts. In the course of our work, we completed an onsite inspection of the vehicle, including photographing the vehicle, arc mapping, and witness interviews. This report and case was reviewed for Technical Fire Manager David R. Meyers, IAAI-CFI (V).

In the course of our work, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment in the area of the bulkhead on the left (mail) side of the vehicle.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. We observed that most of the vehicle structure on the passenger compartment had been consumed by fire. We observed the bulkhead of the vehicle sustained substantial fire damage near the center of the vehicle. The cargo roof had a large hole burned through the center of the roof. The rear cargo door had been damaged by the fire and had collapsed into the cargo area. There was no evidence to indicate that the LLV had recently been involved in a collision.

At the time of the exam, we observed both of the LLV tires on the front of the vehicle had been mostly consumed by the fire. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. Both front doors had been consumed by fire.

Interior Inspection:

Examination of the interior of the vehicle revealed extensive fire damage to the driver's compartment. The dashboard had been consumed by fire. The driver seat had been consumed by fire. The cargo area had sustained damage to the roof and door. The area between the engine compartment and the driver's area had been consumed by the fire and the aluminum framing members were also consumed.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine had a fuel injected throttle body design. The engine was severely damage by the fire and most of the components in the engine compartment.

Undercarriage Inspection:

Due to the vehicle having two flat front tires, the vehicle was unable to be moved and placed on a lift for inspection. No indications were observed that the fire originated from the undercarriage area.

Fuse Panel Inspection:

The fuse panel had been completely consumed by the fire and the only remaining components were the conductors that were used in the fuse panel.

Area of Fire Origin:

Based on the statement by the driver, the fire appears to have started in the left center of the dashboard area.

Potential Contributing Factors:

The vehicle had recent repairs to the ignition module. The rotor and cap were replaced in November of 2018. The vehicle also had the blower motor and fan replaced in October of 2018. The vehicle has had five headlight switches replaced between 2013 and 2016.

Evidence Collected:

We attempted to obtain an oil sample from the oil filter, but due to the fire damage to the remaining oil in the filter was not sufficient for the lab to conduct a test.

Interviews:

The carrier/driver was interviewed by phone and she stated that she was delivering six packages to 618 Sudbury Street in Marlborough, Massachusetts. She pulled into the driveway and turned the vehicle off. After she left the packages, she started the vehicle and the vehicle would not move. She shut it off and restarted the vehicle again. She noticed smoke coming from the left center of the vehicle and when she exited the vehicle to remove the mail, she saw fire under the front windshield on the mail side of the vehicle. She stated that the vehicle was running rough that day and the right turn signal was not working. She stated that the headlights worked sometimes and the same with the heater. Ms. reported that when she shut the vehicle off, sometimes there was a noise that happened and when that happened, she would just shut off all the lights and the noise would go away. The fuel gauge did not work and she filled the tank on Wednesdays and Saturdays.

This report contains a summary of our findings and does not include a full description of the investigative tasks and methodology we took to reach our conclusions. If a full final report of findings is needed, one will be completed at the request of USPS.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,

RIMKUS CONSULTING GROUP, INC.

Shawn P. Brecken

Shawn P. Brecken, IAAI, CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

March 6, 2019
RCG File No. 44804156

Photograph 1
Front of the vehicle.



Photograph 2
Mail side of the vehicle.



March 6, 2019
RCG File No. 44804156

Photograph 3
Rear of the vehicle.



Photograph 4
Drivers side of the vehicle.



March 6, 2019
RCG File No. 44804156

Photograph 5
Driver's compartment.



Photograph 6
Mail side passenger's area.



March 6, 2019
RCG File No. 44804156

Photograph 7
Engine compartment.



Photograph 8
Fuse panel area.



March 6, 2019
RCG File No. 44804156

Photograph 9
Battery area.



March 6, 2019
RCG File No. 44804156

Curriculum Vitae



SHAWN P. BRECKEN EMT, CFI, CFIE, CVFI FIRE CONSULTANT

Mr. Brecken's professional career includes 35 years with the Marlborough Fire Department in the City of Marlborough, MA. In that capacity he has been involved in many different emergency services including IAAI Certified fire investigator and front line supervisor. His duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Brecken has an Associate Degree in Fire Science from Quinsigamond Community College. He maintains certifications as a fire investigator.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.S – Fire Science - Quinsigamond Community College
EMT – Emergency Medical Technician
CFI – Certified Fire Investigator – IAAI
CFIE – Certified Fire Explosive Investigation - NAFI
CVFI - Certified Vehicle Fire Investigator NAFI
MA CFI- Certified Fire Investigator
International Association of Arson Investigator – Member
National Association of Fire Investigators – Member
International Association of Arson Investigator, MA Chapter – Member
Metro Fire/Arson Investigation Association – Member

EMPLOYMENT HISTORY

2017 – Present	Rimkus Consulting Group, Inc.
1984 – 2017	Marlborough Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
8910 Purdue Road, Suite 170
Indianapolis, IN 46268
(800) 971-6587 Telephone
(317) 510-6488 Facsimile

March 4, 2016

Re: RCG File No: 58404598
LLV Number: 0204094
VMF Location: 615 South Capitol Avenue in Indianapolis, Indiana
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 0204094 that occurred at 4603 Wea Drive, in Kokomo, Indiana, on January 9, 2016. In the course of the work, we examined and documented the fire damaged vehicle, and interviewed the carrier/operator on January 26, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 615 South Capitol Avenue, Indianapolis, Indiana. In the course of our work we inspected and photographed the vehicle, reviewed maintenance and repair records, and completed witness interviews. The work to complete this assignment was performed by Fire Consultant, John W. Gray, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations."

Conclusions

1. Based on an analysis of the fire patterns, witness statements, and the remaining physical evidence, the fire was determined to have originated on the interior operator compartment of the involved LLV.

2. The specific area of fire origin was determined to be in and around the dashboard and electrical wiring routed through this area.
3. The specific ignition sequence and cause of the fire was the result of an adverse electrical event involving the wiring within the dashboard of the vehicle. Based on the damage, the headlamp switch could not be eliminated as a contributing factor.

Observations

Exterior Inspection:

The exterior examination of the vehicle revealed evidence of fire damage primarily concentrated in the area of the passenger compartment. There was a large hole visible in the windshield on the driver's side of the vehicle.

Interior Inspection:

The interior examination of the vehicle revealed evidence of fire damage primarily concentrated in the forward portion of the compartment. We observed that the instrument cluster and electrical wiring in the dashboard area were severely damaged. There was smoke and heat damage observed throughout the passenger and cargo compartments.

Engine Compartment Inspection:

The engine compartment was largely undamaged. The vehicle was equipped with a four cylinder, 2.5 liter, gasoline engine. The engine oil level and transmission fluid level was observed to be within normal limits. The LLV was equipped with a GM fuel filter system.

Undercarriage Inspection:

Examination of the undercarriage of the vehicle indicated no visible evidence of fire damage in the undercarriage. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

Examination of the fuse panel in the operator's compartment indicated that three 20-amp fuses had opened or "blown." We were unable to determine the circuits protected by the fuses; however, the locations of the "blown" fuses are depicted in Photograph 4 below. The blown fuses were evaluated for determination by technical management.

The blown fuses were identified as a 20-amp fuse labeled "CIGAR", which is hot at all times, a 20-amp fuse labeled "TAIL LPS", which is hot at all times, and 5-amp fuse

labeled "INST LPS", which is hot when the control panel and interior lamps switch is in the "on" position and was labeled as "output voltage is variable".

Area of Fire Origin:

The area of fire origin was determined to be in the electrical wiring and components in the dashboard just forward of the steering wheel. We observed severe fire damage to the wiring and components in this area.

Contributing Factors:

It was our opinion that an unspecified electrical failure occurred in the electric wiring and components in the dashboard. The headlamp switch also cannot be eliminated at this time and will be examined in the lab.

Evidence Collected:

We collected the following items as evidence:

- A. Instrument dash cluster with miscellaneous wiring
- B. Headlamp switch
- C. Heater blower switch

Collected evidence will be examined in the Charlotte, North Carolina office.

The evidence was examined and confirmed the electrical fire. The severe damage to the headlamp switch could not be eliminated as a contributing factor.

Interviews:

On January 28, 2016, we interviewed the carrier/operator. He stated that he was driving the vehicle on his regular route when he began to smell a burning plastic odor. He stated that the heater and headlights were turned "on." He stated that he then observed smoke coming from the defrost vent on the dashboard. He stated that he turned the vehicle "off" and began removing mail from the vehicle. He stated that the smoke continued to become more intense at which time he observed a hole burn through the dashboard directly above the headlamp switch.

Service Records:

According to a review of the service records, the headlamp switch was replaced on December 28, 2015 prior to the fire. This was listed on the Wheeler Bros, Inc –

Managed Inventory Program form. We could not confirm it in the VMF records. This switch has the potential to be wired wrong due to the lack of color coding on the replacement part.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

John W. Gray

John W. Gray, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 4, 2016
RCG File No. 58404598

Photograph 1
Front view of LLV 0204094.



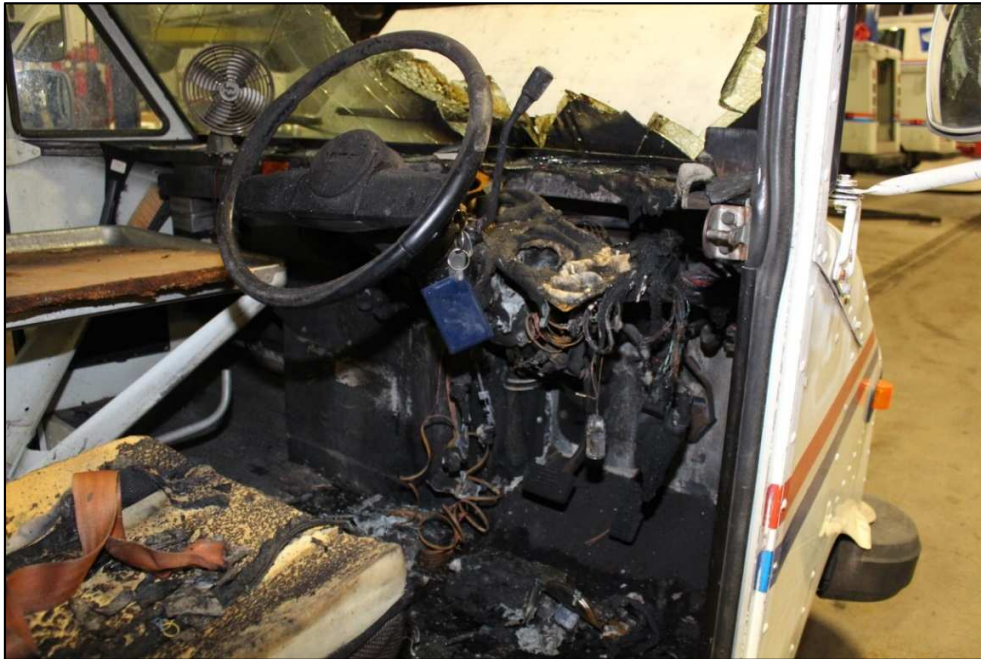
Photograph 2
Examination of the engine compartment.



March 4, 2016
RCG File No. 58404598

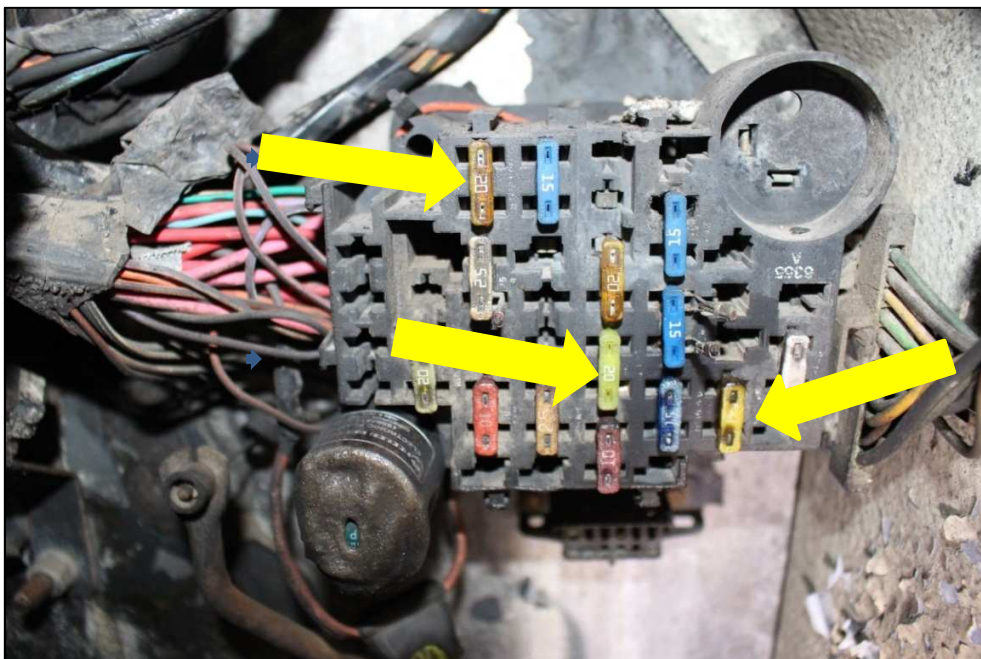
Photograph 3

Examination of passenger compartment (area of origin).



Photograph 4

The "blown" fuses are indicated by arrows.

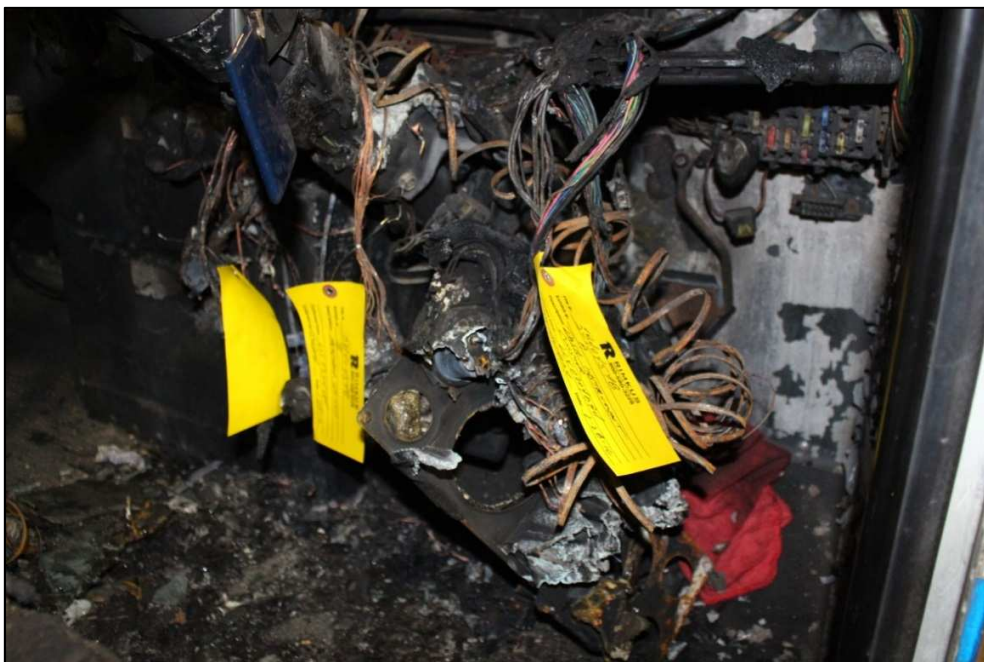


March 4, 2016
RCG File No. 58404598

Photograph 5
View of the headlamp switch.



Photograph 6
Tagging and collecting artifacts from area of origin.

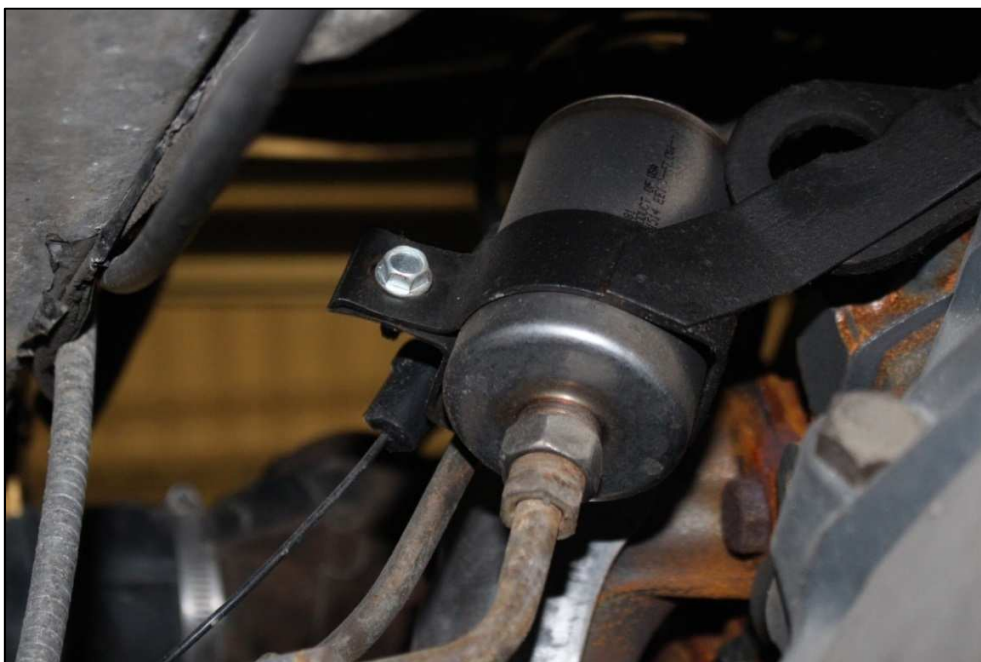


March 4, 2016
RCG File No. 58404598

Photograph 7
View of the vehicle frame.



Photograph 8
View of the vehicle fuel filter.



March 4, 2016
RCG File No. 58404598

CVs



**JOHN W. GRAY C.F.I., C.V.F.I.
FIRE CONSULTANT**

Mr. Gray is a Certified Fire Investigator (CFI) through the International Association of Arson Investigators and a Certified Vehicle Fire Investigator (CVFI) through the National Association of Fire Investigators. He is also certified as a Fire Investigator I by the State of Indiana. Mr. Gray was honorably retired after a 25-year career as a police officer with the Marion County Sheriff's Department in Indianapolis.

Since joining Rimkus Consulting Group in March 2005, Mr. Gray has performed hundreds of fire investigations for insurance companies, law firms, and property owners. His professional experience includes residential, commercial, and vehicle fire origin and cause investigation. Mr. Gray has testified in matters regarding fire origin and cause in both civil and criminal proceedings.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator (CFI) International Association of Arson Investigators
Certified Vehicle Fire Investigator (CVFI) National Association of Fire Investigators
Certified Fire Investigator I State of Indiana
Certified Law Enforcement Officer (Retired) State of Indiana
Licensed Private Investigator (IN-IL-OH-KY-MI-PA-LA)

Member of: International Association of Arson Investigators (IAAI)
International Association of Arson Investigators (Indiana Chapter # 14)
National Association of Fire Investigators (NAFI)

EMPLOYMENT HISTORY

2005 – Present	Rimkus Consulting Group, Inc.
1980 – 2005	Marion County (Indiana) Sheriff's Department.
1974 – 1980	McCormick/All Portions Inc.



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
One Concord Center
2300 Clayton Road, Suite 100
Concord, CA 94520
(866) 748-0379 Telephone
(925) 677-7445 Facsimile

December 9, 2015

Re: RCG File No: 01905144
USPS LLV Number: 0204459
Exam Location: 3131 Arch-Airport Road, Stockton, California
Subject: Final Report

On October 16, 2015, a fire occurred involving USPS LLV 0204459. The loss location was reported as "No listing of where fire took place." USPS Carrier, indicated the location of the fire was on Valk Road in Oakdale, California. LLV 0204459 was examined at the VMF located at 3131 Arch-Airport Road in Stockton, California.

Rimkus Consulting Group, Inc. was retained to examine LLV 0204459, VIN 1GBCS10E7M2903981 to determine the cause of the fire. In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on October 27, 2015. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver Ms. Angelique Taylor, and documented the vehicle with photographs. The case file was reviewed and finalized by Jack R. Kennedy, III, IAAI-CFI, Technical Manager.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. After a thorough examination of the LLV, it was determined that the vehicle sustained minor fire and smoke damage confined to the engine compartment and was in a condition that could be repaired to return to service.

2. The fire was determined to have originated in the engine compartment, more specifically in and around two wiring harnesses and a ground strap that were routed near the center of the bulkhead.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of heat generated at the ground strap when a dead-short occurred at the starter motor positive lead post when it contacted the vehicle frame. The contact was due to a failure of a frame mounting bracket weld joint.

Observations

Exterior Inspection:

There was no visible fire damage on the exterior of the vehicle.

Interior Inspection:

The interior passenger and cargo compartment was free of fire damage and intact.

Engine Compartment Inspection:

Examination of the engine compartment indicated minimal and localized fire/heat damage to two electrical wiring harnesses located near the top, center section of the bulkhead, immediately above and to the rear of the engine. The surrounding engine compartment area and underside of the hood sustained minor smoke damage.

Examination of the wiring harnesses indicated exterior heat exposure damage occurred. The protective flexible plastic sheaths were burned and melted, exposing intact conductors and primarily unburned insulation. Several conductors' insulation sustained external charring, however conductors remained covered and no adverse electrical activity was evident.

Further examination revealed a severed, flat, copper stranded ground strap, attached to the bulkhead adjacent to the burned wire harnesses. The lower section of the ground strap was attached to the upper rear portion of the engine. A plastic valve cover breather tube fitting was melted from heat where the ground strap was in contact with it.

These observations indicated a potential adverse electrical event which heated the ground strap, causing ignition and melting of plastic components that were in contact with the ground strap.

The fuel lines and associated components were intact with no fire damage. The LLV was equipped with a GM fuel filter system.

Undercarriage Inspection:

There was no indication of fire damage to the vehicle undercarriage. The vehicle frame was a GM style frame.

Examination of the right front frame area indicated the engine mounting bracket weld failed, separating the right front wheel upper control arm/motor mount assembly from the frame.

This failure caused a shift of the right front wheel camber, as well as movement of the engine in relation to the vehicle steel frame. This dislocation also caused the steering column contact and rotational friction wear with the displaced mounting bracket.

The displacement and movement of the engine ultimately allowed the positive battery lead connection at the starter motor post to contact the vehicle metal frame, resulting in a non-fused dead-short (ground fault) of the vehicle battery.

Fuse Panel Inspection:

Examination of all fuses indicated no evidence of activation.

Area of Fire Origin:

Examination indicated the fire originated mid-way at the upper edge of the bulkhead, where the bare ground strap was in contact with wiring harness plastic flex protective sheathing. The plastic sheathing was ignited due to heat generated at the copper ground strap when a dead-short occurred at the starter motor positive lead post when it contacted the vehicle frame. Additional evidence of the heated ground strap was a melted plastic breather tube connector located at the top rear of the engine valve cover which was also in contact with the heated ground strap.

Potential Contributing Factors:

In October 2015, 10 days prior to the incident, routine service and other repairs were performed by contract company and no reference was made regarding the right front mounting bracket.

In September 2015, the engine was replaced by a contract company, and no reference was made regarding the right front mounting bracket.

In November 2014, the upper right front wheel control arm was replaced and the right front control arm/motor mount bracket had welding performed by contractor Larry's Auto Repair. This activity may have resulted in the failure of the mounting bracket welded joint.

Invoices and USPS parts lists are attached.

Evidence Collected:

There was no evidence collected.

Interview:

Carrier for USPS, provided the following information:

- At the time of the fire, she was making her rounds on Valk Road in Oakdale, California, at approximately 11:30 a.m.
- The weather was clear, temperature was in the mid-80's.
- She had been driving the LLV for approximately one and a half hours.
- There were no problems with the LLV until she pulled away from a mail stop and the engine died.
- She heard a "buzzing" sound, "like a warning buzzer."
- She then smelled melting or burning plastic.
- She opened the engine compartment hood and saw a small fire, which she extinguished with her water bottle.

This report is a summary of our conclusions only and does not include the methodology or investigative tasks that were completed to reach these conclusions. If a full report is necessary, one can be prepared at the client's request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Manager

Attachments: Photographs, Invoices/Parts Lists, CVs

December 9, 2015
RCG File No. 01905144

Photograph 1
LLV 0204459.



Photograph 2
Engine compartment. Yellow circle indicates fire damaged area. Yellow arrows indicate fire/heat areas.



December 9, 2015
RCG File No. 01905144

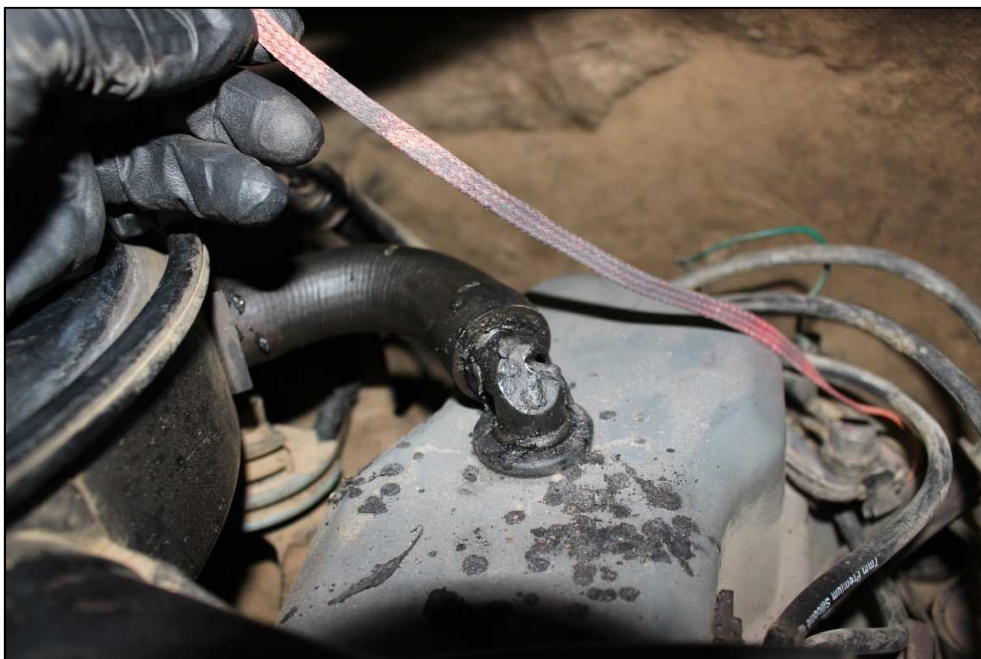
Photograph 3

Wiring harness ignited by heated ground strap at bulkhead above rear of engine.



Photograph 4

Ground strap lower section melted plastic valve cover breather fitting, center.



December 9, 2015
RCG File No. 01905144

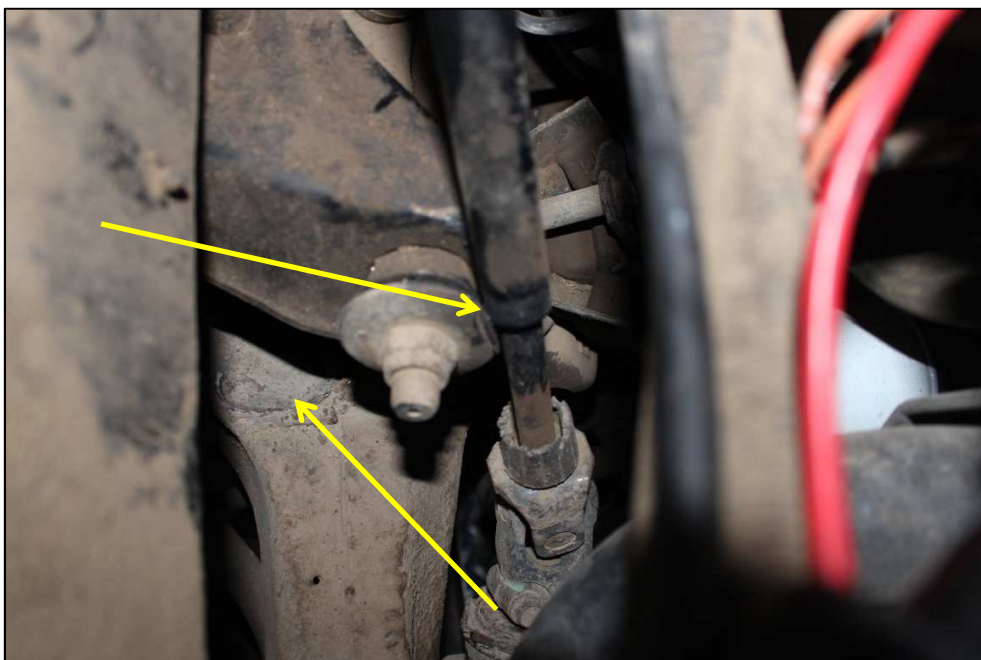
Photograph 5

Wiring harness at bulkhead relatively intact and indicated external heat exposure.



Photograph 6

Steering column shaft contacting upper RF wheel control arm and failed weld, arrows.



December 9, 2015
RCG File No. 01905144

Invoices/Parts Lists

Vehicle Number 0204459
Description 14793453
Make Model 1/2T GRUMMAN LLV 90 RH
Finance Number 055496

PMI
Status USPS Closed
Work Order Type 24-UNSCHEDULED REPAIR
Last PM 05/19/2015
VPO 953619998-OAKDALE-055496

Odometer Previous 153,180
Current 153,181
Start Date 02-SEP-2015 09:18:32
Completion Date 22-SEP-2015 11:54:03

Default Stock
Reserve Vehicle #
Reason For Delay
Costs
Total \$2,483.50
Parts \$2,483.50
Labor

Vehicle History
Parts
Labor
Unclose Work Order
Complete Work Order

Item	Description	UOM	Cost	Requested By	Req'd	Issued	Ret'd	Quantities			Return Subinventory	Locator	Serial#	A/C
								Avail	Issue					
501410	ENGINE, 2.5E 151E COMPLETE JASPER (2.5E LLV)	EA	2299	QUIROGA, JUD	1	1	0	2	0		POSTAL	Z 00 Z POST	751123	24-
501510	ENGINE, 2.5A 151A LONG BLOCK JASPER (2.5A LLV)	EA	2299	QUIROGA, JUD	1	1	0	2	0		POSTAL	Z 00 Z POST	752107	24-
25040881	FILTER, AIR (2.5 LLV)	EA	247	QUIROGA, JUD	1	1	0	62	0		POSTAL	C 12 A POST		24-
25041487	FILTER, PCV (2.5 LLV)	EA	54	QUIROGA, JUD	1	1	0	82	0		POSTAL	C 13 B POST		24-
52491735	RADIATOR, (2.5 LLV)	EA	114.82	QUIROGA, JUD	1	1	0	3	0		POSTAL	T 00 R POST		24-
19157997	PLUG, SPARK DENSO U-GROOVE (2.5 LLV)	EA	1.59	QUIROGA, JUD	4	4	0	54	0		POSTAL	C 01 E POST		24-
10207373	THERMOSTAT, (2.5 LLV)	EA	2.49	QUIROGA, JUD	1	1	0	9	0		POSTAL	C 06 B POST		24-
10181327	PUMP, WATER (2.5 LLV)	EA	42.09	QUIROGA, JUD	1	1	0	10	0		POSTAL	C 06 C POST		24-
B2380	ANTI-FREEZE, EXTENDED LIFE (ADMIN)	EA	13.86	QUIROGA, JUD	1	1	0	14	0		POSTAL	P 00 L POST		24-
25010792	FILTER, OIL (87-94 LLV)	EA	1.87	QUIROGA, JUD	1	1	0	107	0		POSTAL	D 03 H POST		24-

LARRY'S AUTO REPAIR

308 N. GRANT STREET
Stockton, CA. 95202
Phone - 209-463-9255 Fax - 209-941-2311
SMOG CHECK 2 # RC150703

INVOICE

20876

Org. Est. # 055118
B.A.R.# ARD150703
E.P.A.# CAL 920175892

INVOICE

Print Date : 11/14/2014

U.S. POSTAL SERVICE

3131 ARCH-AIRPORT RD
Stockton, CA 95213
Home 209-983-6321 ALBE --- Spouse 209-983-6244 JUDY
Cust ID : 667

1991 GRUMMAN - LLV - 2.5L
Lic # : 0204459 - CA
Unit # : 0204459
Vin # : 1GBCS10E7M2903981
Hat # : 7

Odometer In : 39758
Odometer Out : 39761

Ref # :

Part Description / Number	Qty	Sale	Extended	Labor Description	Extended
ENGINE OIL 5/30	4.00	3.20	12.80	CUSTOMER REQUESTS:	0.00
5/30				TIRE PRESSURE (PSI)	
COOLANT	2.00	13.95	27.90	L/F IN 50 OUT 50	
COOL				R/F IN 50 OUT 50	
WINDSHEILD WASHER				L/R IN 45 OUT 50	
SOLVENT	1.00	1.34	1.34	R/R IN 45 OUT 50	
VWV				CUSTOMER DENIES CHECK. _____	
Fuel Injection Pressure Regulator -				ADDITIONAL FEES MAY APPLY.	
Limited Lifetime Warranty - Fuel				IF NITROGEN FILLED, WE ARE UNABLE	
pressure regulator diaphragm kit.				TO INFLATE _____	0.00
PR152	1.00	57.49	57.49	CHECK LONG CRANK TIME.	47.50
TRANSMISSION FLUID				PINCHED OFF RETURN AND STARTS MUCH BETTER.	
ATF	4.00	2.35	9.40	SUGGEST REPLACE FUEL PRESSURE REGULATOR AND	
OIL FILTER				RECHECK	0.00
CUSTOMER PART	1.00	0.00	0.00	LEVEL B PMI U.S.P.S. U2	237.50
AIR FILTER				LONG CRANK TIME. WILL DIAGNOSE.	
CUSTOMER PART	1.00	0.00	0.00	DRIVER INTERIOR DOOR PANEL LOOSE, MISSING 3 SCRE	
BREATHER FILTER				AND 2 ARE BROKEN.	
CUSTOMER PART	1.00	0.00	0.00	HEATER KNOB DOES NOT MOVE. TRACED TO BAD VALVE.	
FUEL PRESSURE REGULATOR				COMFORT FAN SWITCH BAD. 1 SPEED ONLY.	
CUSTOMER PART	1.00	0.00	0.00	RIGHT UPPER CONTROL ARM BOLTS LOOSE IN FRAME, AND	
DOOR TRIM SCREWS				SHIMS MISSING.	
(INTERIOR)				COOLANT IS WATER.	
CUSTOMER PART	3.00	0.00	0.00	NEEDS FRONT TIRES.	
WIPER BLADES				SPEEDO BULLET LEAKING.	
CUSTOMER PART	2.00	0.00	0.00	NEEDS FRONT BRAKES.	
WATER HEATER CONTROL				PARKING BRAKE LIGHT IS NOT COMING ON. FOUND BROKEN	
VALVE				WIRES. WILL NEED TO REPAIR	
CUSTOMER PART	1.00	0.00	0.00	REPAIR BROKEN WIRES FOR PARKING	28.50
COMFORT FAN SWITCH				BRAKE AND INSTALL SWITCH	
CUSTOMER PART	1.00	0.00	0.00	ALIGNMENT	59.95
FRONT END SHIMS (SEVERAL				FRONT WHEEL ALIGNMENT	
PLEASE)				DRAIN AND REFILL COOLANT	28.50
CUSTOMER PART	0.00	0.00	0.00	REMOVE AND REPLACE FUEL PRESSURE	76.00
TIRES				REGULATOR	
CUSTOMER PART	2.00	0.00	0.00	REMOVE, DRILL OUT TWO BROKEN	38.00
SPEEDO BULLET				RIVETS AND REATTACH RIVETS AND	
CUSTOMER PART	1.00	0.00	0.00	SCREWS	
FRONT PADS				REMOVE AND REPLACE HEATER	38.00
CUSTOMER PART	1.00	0.00	0.00	CONTROL VALVE	
ROTOR SEALS				REMOVE AND REPLACE COMFORT FAN	19.00
				SWITCH	
				REMOVE RIGHT UPPER CONTROL ARMS,	171.00
				WELD IN BOLTS AND INSTALL SHIMS ON	
				LEFT SIDE	
				MOUNT AND BALANCE TIRES (FRONT)	40.00

Copy sent

LARRY'S AUTO REPAIR
308 N. GRANT STREET
Stockton, CA. 95202
Phone - 209-463-9255 Fax - 209-941-2311
SMOG CHECK 2 # RC150703

OAKdale
LA 15038

INVOICE
20876
Org. Est. # 055118
B.A.R.# ARD150703
E.P.A.# CAL 920175892

INVOICE Comm: Mo 12805060

Print Date : 11/14/2014

U.S. POSTAL SERVICE

3131 ARCH-AIRPORT RD

Stockton, CA 95213

Home 209-983-6321 ALBE --- Spouse 209-983-6244 JUDY

Cust ID : 667

1991 GRUMMAN - LLV - 2.5L

Lic # : 0204459 - CA

Unit # : 0204459

Vin # : 1GBCS10E7M2903981

Hat # : 7

Odometer In : 39758

Odometer Out : 39761

Ref # :

Part Description / Number	Qty	Sale	Extended	Labor Description	Extended
CUSTOMER PART	2.00	0.00	0.00	REMOVE AND REPLACE SPEEDO BULLET	28.50
UPPER A-ARM (RIGHT)				RELIN FRONT BRAKES	85.50
CUSTOMER PART	1.00	0.00	0.00	MACHINE FRONT ROTORS, REPACK	133.00
TRANS. FILTER KIT				WHEEL BEARINGS AND REPLACE SEALS	
CUSTOMER PART	1.00	0.00	0.00	REMOVE AND REPLACE TRANSMISSION	57.00
BRAKE LIGHT SWITCH				FILTER AND FLUID	
CUSTOMER PART	1.00	0.00	0.00		

NOV 14 2014

Org. Estimate \$ 1,196.88 Revisions \$ 0.00 Current Estimate \$ 1,196.88

Labor: 1,087.95
Parts: 108.93
Sublet: \$0.00

Sub: 1,196.88
Tax: 0.00
Total: 1,196.88
Bal Due: \$1,196.88

[Payments -]

THANK YOU FOR YOUR BUSINESS

I hereby authorize the above repair work to be done along with the necessary material and hereby grant you and/or your employees permission to operate the car or truck herein described on street, highways or elsewhere for the purpose to testing and/or inspection. An express mechanic's lien is hereby acknowledged on above car or truck to secure the amount of repairs thereto. Warranty on parts and labor is 12 months or 12,000 miles whichever comes first. Warranty work has to be performed in our shop & cannot exceed the original cost of repair.

Signature _____ Date _____ Time _____

Work Order (952)

Work Order12387814

Vehicle Number0204459

PMIPMI

StatusClosed

Odometer

Previous135,714

Current139,761

Default StockPOSTAL

Reserve Vehicle #2215163

Reason For Delay

DescriptionPREVENTIVE MAINTENANCE INSPECTION / Larry's

Make Model10731/2T GRUMMAN LLV 90 RH

Next Scheduled PM04/13/2015

Work Order Type22-SCHEDULED MAINTEN

Vehicle Under WarrantyNo

Vehicle In ShopNo

Emissions Test Number

Finance Number055496

Last PM06/10/2014

VPO953619998-OAKDALE-055496

Actual Dates

Start Date12-NOV-2014 10:30:29

Completion Date17-NOV-2014 13:48:43

Costs

Total\$375.18

Parts\$375.18

Labor

Complete Work Order

Unclose Work Order

Vehicle History

Parts

Labor

Item	Description	UOM	Cost	Requested By	Req'd	Issued	Ret'd	Quantities		Return	Subinventory	Locator	Serial#	A/C
								Avail.	Issue					
<input type="checkbox"/> 19133654	ARM, CONTROL UPPER RS (87-94 LLV)	EA	103.74	QUIROGA, JUD	1	1	0	1	0		POSTAL	B.06.F.POST		22-
<input type="checkbox"/> 1362014	BUMPER, CONTROL ARM UPPER (87-94 LLV)	EA	3.78	QUIROGA, JUD	1	1	0	8	0		POSTAL	B.06.B.POST		22-
<input type="checkbox"/> 25010792	FILTER, OIL (87-94 LLV)	EA	2.44	QUIROGA, JUD	1	1	0	107	0		POSTAL	D.03.H.POST		22-
<input type="checkbox"/> 25040881	FILTER, AIR (2.5 LLV)	EA	4.17	QUIROGA, JUD	1	1	0	62	0		POSTAL	C.12.A.POST		22-
<input type="checkbox"/> 25041487	FILTER, PCV (2.5 LLV)	EA	.52	QUIROGA, JUD	1	1	0	82	0		POSTAL	C.13.B.POST		22-
<input type="checkbox"/> 14074318	SWITCH, PARK BRAKE INDICATOR (LLV/97 1 & 2	EA	3.76	QUIROGA, JUD	1	1	0	1	0		POSTAL	B.02.D.POST		22-
<input type="checkbox"/> 15689681	LEVER, PARK BRAKE (2.2 LLV)	EA	26.17	QUIROGA, JUD	1	1	0	7	0		POSTAL	B.02.E.POST		22-
<input type="checkbox"/> 52-20	BLADE, WIPER 20IN (87-94 LLV)	EA	9.91	QUIROGA, JUD	2	2	0	25	0		POSTAL	C.04.D.POST		22-
<input type="checkbox"/> 461854	BOLT, CONTROL ARM UPPER (87-94 LLV)	EA	6.23	QUIROGA, JUD	2	2	0	6	0		POSTAL	B.06.B.POST		22-
<input type="checkbox"/> MX154	PADS, BRAKE FT THERMO QUIET (87-94 LLV)	EA	20.83	QUIROGA, JUD	1	1	0	17	0		POSTAL	B.03.B.POST		22-
<input type="checkbox"/> 85685005	SWITCH, HEATER & DASH FAN TOGGLE (87-94 LLV)	EA	5.72	QUIROGA, JUD	1	1	0	5	0		POSTAL	C.03.C.POST		22-
<input type="checkbox"/> LT195/75R14	TIRE, NEW (87-94 LLV)	EA	71.750	QUIROGA, JUD	2	2	0	93	0		POSTAL	T.00.R.POST		22-
<input type="checkbox"/> 85698014	VALVE, HEATER CONT (87-94 LLV)	EA	14.82	QUIROGA, JUD	1	1	0	5	0		POSTAL	C.06.A.POST		22-
<input type="checkbox"/> 345215	SLEEVE, SPEEDO DRIVEN BULLET (87-94 LLV)	EA	11.51	QUIROGA, JUD	1	1	0	4	0		POSTAL	A.07.A.POST		22-
<input type="checkbox"/> 3965092S	SEAL, WHEEL FT W/LIP (87-94 LLV)	EA	97	QUIROGA, JUD	2	2	0	28	0		POSTAL	B.10.B.POST		22-
<input type="checkbox"/>														
<input type="checkbox"/>														
<input type="checkbox"/>														
<input type="checkbox"/>														
<input type="checkbox"/>														
<input type="checkbox"/>														

Print Pick List

Select All

Issue

Return

December 9, 2015
RCG File No. 01905144

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
3620 Horizon Drive, Suite 200
King of Prussia, Pennsylvania 19406
Telephone: (610) 941-5599

November 5, 2019

Re: RCG File No: 100016168
LLV Number: 0205495
VMF Location: 421 Benigno Boulevard Bellmawr, New Jersey
Subject: Preliminary/Final Report

Dear ,

On September 20, 2019, a fire occurred involving US Postal Service LLV 0205495, VIN: 1GBCS10E3M2905047. The vehicle was examined at the USPS South Jersey VMF at 421 Benigno Boulevard in Bellmawr, New Jersey. The fire incident reportedly occurred at 720 Shunpike Road in Cape May, New Jersey.

Rimkus Consulting Group, Inc. was retained to investigate the origin and cause of the fire. The investigation was assigned to and completed by Fire Consultant Patrick T. Earley, IAAI-CFI. A technical review of this report was completed by Technical Fire Manager David R. Meyers IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment of the involved LLV.
2. The specific area of origin was the area between the throttle body injection unit and the air filter housing.

3. The specific ignition sequence and cause of the fire was determined to be the ignition of escaping fuel and/or fluid vapors out of the throttle body injection unit to a competent ignition source within the engine compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. We observed no exterior fire damage to the vehicle. At the time of our inspection all the wheels and tires were intact and inflated.

Interior Inspection:

We observed the presence of no fire damage or evidence of fire spread to the interior of the vehicle.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a 2.5 Liter General Motors engine, with throttle body injection fuel delivery system and standard ignition coil. The battery was intact, and we observed no evidence of fire damage. We examined the air cleaner, and corresponding items and observed fire damage to the air filter and crank case ventilation filter. We observed fire damage to the immediate area in and around the vehicle's air filter and throttle body injection unit components.

Undercarriage Inspection:

The vehicle was equipped with a GM frame, the undercarriage of the vehicle exhibited no fire damage. We observed no evidence of collision and/or mechanical damage to the undercarriage to contribute to the causation of the fire loss.

Fuse Panel Inspection:

The fuse panel was intact, and we observed no fire or heat damage to this component.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence it was determined that the fire originated in the engine compartment. The specific area of the origin was the area between the throttle body injection unit and the air filter housing.

Potential Contributing Factors:

The ignition scenario included the ignition of escaping fuel and/or fluid vapors out of the throttle body injection unit to a competent ignition source within the engine compartment. We examined the throttle body unit and observed the partial absence to the base mounting gasket to this unit.

Evidence Collected:

None.

Interviews:

We were unable to interview the carrier of the vehicle but, did review her statement in an email.

Statement from email of carrier.

Pulled up to 720 Shunpike and shut truck off. Heard a pop noise come from the engine. Didn't think anything of it because it has done it before. Delivered a parcel and got back into truck. Tried to start it three times and paused for a minute or two between each attempt. On the third attempt she tried to give it gas and it still wouldn't start. Smoke started to come from the dashboard and she saw little black specks coming from the dashboard as well, so she got out of the truck and opened the hood. Saw flames coming from the engine and shut the hood.

When she was trying to start it was making a noise like it was trying to start, but it wouldn't turn over. It was running well all morning long until this point.

Service Records:

A review of the provided service records for the involved LLV was conducted. The unit was serviced for a wheel bearing on August 29, 2019.

This preliminary report contains a summary of our findings and does not include a full description of the investigative tasks and methodology we took to reach our conclusions. If a full final report of findings is needed, one will be completed at the request of USPS.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Patrick T. Earley

Patrick T. Earley, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

November 5, 2019
Rimkus File No. 100016168

Photograph 1

Overall view of LLV 0205495.



Photograph 2

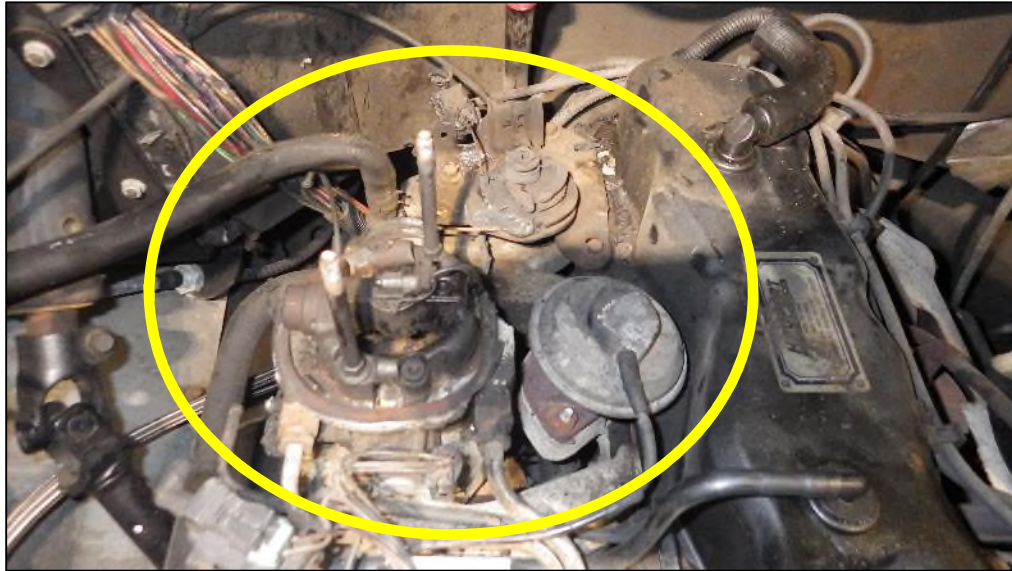
Overall view of engine compartment.



November 5, 2019
Rimkus File No. 100016168

Photograph 3

View of the throttle body injection unit on the intake manifold.



Photograph 4

View of the air cleaner and remains of the air filter.



November 5, 2019
Rinkus File No. 100016168

Curriculum Vitae



Patrick T. Earley, CFI, CFPS, CFEI

Fire Consultant
Fire Division

Background

Mr. Earley holds a B.A. in Criminal Justice Administration and is a Certified Fire Investigator with the International Association of Arson Investigators, a Certified Hazard Recognition Specialist with National Fire Protection Association and a Certified Fire and Explosions Investigator with the National Association of Fire Investigators along with a number of other certifications.

He has over 25 years of experience in the fire and emergency services, serving in many capacities in the fire service industry from firefighter (volunteer) to fire Inspector, fire investigator, and fire official (acting), along being an emergency medical technician, fire instructor, and fire protection specialist. He has also served on several technical committees for the National Fire Protection Association.

Besides being a subject matter expert in fire and life safety by the NFPA, Mr. Earley offers a wide array of knowledge in fire investigation, fire protection systems, and life safety codes. Most recently, he developed the course and test content for the NFPA Certification Certified Hazard Recognition Specialist. He has a strong discipline in not only fire investigation, but fire protection and fire prevention.

Contact Information

(972) 518-0900

pearley@rimkus.com

3620 Horizon Drive
Suite 200
King of Prussia, PA 19406



Rimkus Consulting Group, Inc.
1881 Worcester Rd.
Suite 203
Framingham, MA 01701
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

February 9, 2016

Re: RCG File No: 44802518
LLV Number: 0205840
VMF Location: 955 Goffs Falls Road in Manchester, New Hampshire
Subject: Final Report

On October 26, 2015, a fire occurred involving LLV 0205840, VIN 1GBCS10E3M2905243 owned and operated by the USPS. The vehicle was located and inspected at 955 Goffs Falls Road in Manchester, New Hampshire. Rimkus Consulting Group, Inc. was retained to determine the origin and cause of the fire. Our inspection of the vehicle occurred on December 9, 2015.

In the course of our work, we inspected and photographed the vehicle and reviewed the work order history. Our work to complete this assignment was conducted by Mr. Scott S. Popovich, CFEI, Fire Consultant. This report and case was technically review by Mr. Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended by the current edition of National Fire Protection Association's N.F.P.A. 921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated on the interior operator compartment of the involved LLV.
2. The specific area of fire origin was determined to be within the dashboard in the area of the electrical conductors associated with the hazard switch.
3. All electrical conductors had been severely damaged by fire and many of the conductors had been frayed and broken.
4. The specific ignition sequence and cause of the fire was determined to be associated with the conductors associated with the hazard switch. The most probable cause was resistive heating or an over current situation with the involved conductors.

Observations

Exterior Inspection:

The exterior was examined. We observed cracking of the windshield and smoke staining of the glass on the windshield. Light smoke staining was observed on the right side door glass. The glass on the left door was broken out. The tires were all intact and inflated. No other damage was evident on the exterior of the vehicle.

Interior Inspection:

The interior was inspected. The inspection began at the rear of the vehicle in the cargo compartment. Smoke staining was found in the cargo compartment. The smoke patterns indicated that the cargo door was down when the fire occurred. The plastic light lenses and air vents were intact and free of melting damage. The driver's area sustained light heat and smoke damage. Broken glass from the left side door was observed on the platform to the left of the driver. The small triangle side windows were cracked; one from mechanical damage and the driver's side was cracked due to thermal damage. The inside of the windshield was smoke stained and cracked due to thermal damage above the driver's wheel. A small pile of melted fire debris was observed on the floor of the driver's compartment. It contained parts of the dashboard. The dash board was melted and partially consumed on the right side. The remaining electrical conductors and switches were hanging out of the dash area on the right side. The data plate was observed on the cargo wall of the vehicle.

Engine Compartment Inspection:

The engine compartment was examined. We did not observe any fire or smoke damage in the engine compartment. The electrical conductors were examined. We did observe adverse electrical activity on a single ground wire that was attached to the negative side of the battery and chassis.

Undercarriage Inspection:

The undercarriage was examined. The vehicle chassis was an AM General frame and we did not observe any fire damage or anomalies to the undercarriage of the LLV.

Fuse Panel Inspection:

The fuse panel was examined. One twenty amp fuse was found open. The fuse was labeled Horn/LPS and was hot at all times. All the other fuses were examined and found closed.

Area of Fire Origin:

The fire originated on the right side of the dash board in the area of the hazard switch.

Contributing Factors:

A potential contributing factor to the ignition of the fire was the continually powered hazard switch on the top right section of the dashboard. A potential resistive heating situation or over current situation most likely compromised the electrical wiring in the area of fire origin which was hot or powered at all times.

Evidence Collected:

Five items of interest were collected as physical evidence. The Evidence was shipped to the Charlotte office of Rimkus Consulting Inc. to be analyzed in the laboratory by Jack R. Kennedy, III, IAAI-CFI to confirm the scene findings and possible failure point.

Exhibit A - 20 amp fuse

Exhibit B - Auxiliary power receptacle

Exhibit C - Hazard switch

Exhibit D - Auxiliary fan switch

Exhibit E - Cargo light switch

Collected evidence was examined and documented in the lab. An electrical event was confirmed associated with the conductors supplying power to the hazard switch in the area of fire origin.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Scott S. Popovich

Scott S. Popovich, CFEI, CFPS
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Eastern Region Fire Manager

Attachments: Photographs, CVs

February 9, 2016
RCG File No. 44802518

Photograph 1

Front and right side of LLV 0205840.



Photograph 2

Dash board and the area of the fire origin.



February 9, 2016
RCG File No. 44802518

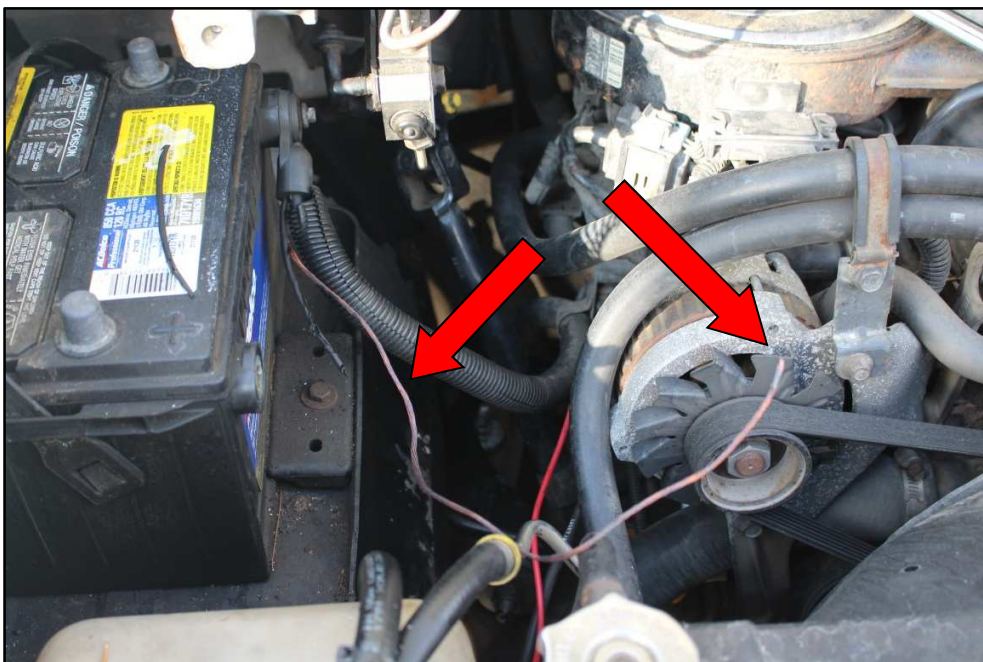
Photograph 3

Close up of the area of origin and components involved.



Photograph 4

Grounding wire with adverse electrical activity.



February 9, 2016
RCG File No. 44802518

CVs



SCOTT S. POPOVICH, CFPS, CFEI, CVFI, FIT FIRE CONSULTANT

Mr. Popovich's professional career includes 25 years with the Woonsocket Fire Department in the city of Woonsocket, RI. In that capacity he has been involved in many different emergency services including Deputy Director of Emergency Management, Assistant Fire Marshal, Lieutenant and Firefighter. As a licensed state of Rhode Island Assistant Deputy State Fire Marshal his duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Popovich has a Master of Science in Fire and Arson Investigation from the University of New Haven with a heavy concentration in forensics and a Bachelor of Science in Public Administration from Roger Williams University. He maintains certifications as a fire investigator and fire inspector and has attended numerous classes at the National Fire Academy and the Rhode Island State Crime Laboratory.

Mr. Popovich was recently recognized for project development for the planning and execution of Emergency Response Training for CVS Corporate Headquarters in Woonsocket, Rhode Island.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

M.S. – Fire and Arson Investigation – University of New Haven, Connecticut
B.S. – Public Administration – Roger Williams University, Rhode Island
A.S. – Fire Science – Community College of Rhode Island

Licenses and Certifications

Fire Investigative Technician (FIT) by the International Association of Arson Investigators
Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) by the National Association of Fire Investigators
Certified Fire Protection Specialist (CFPS) by the National Fire Protection Association
Certified Fire Inspector (CFI) by the National Fire Protection Association
Certified Evidence Collection Technician (ECT) by the International Association of Arson Investigators
Licensed Emergency Medical Technician by the State of Rhode Island
Licensed Oil Heat Technician
Licensed Hoisting Equipment Operator by the State of Rhode Island
Licensed Private Detective in the State of Rhode Island

Professional Memberships

IAAI (International Association of Arson Investigators)
RIIAAI (Rhode Island Chapter of International Association of Arson Investigators) Board Member



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
6990 Columbia Gateway Drive, Suite 110
Columbia, MD 21046
(877) 872-2999 Telephone
(410) 872-9111 Facsimile

August 11, 2016

Re: RCG File No: 47508271
LLV Number: 0208009
VMF Location: 8409 Lee Highway in Merrifield, Virginia
Subject: Final Report

Rimkus Consulting Group, Inc. was requested to examine the vehicle fire loss involving USPS LLV 0208009, VIN 1GBCS10E6M2907486, that reportedly occurred while the vehicle was being operated at 9514 Debra Spradlin Court in Burke, Virginia. In the course of our work, we examined and documented the fire-damaged vehicle and interviewed the carrier/operator on June 16, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 8409 Lee Highway in Merrifield, Virginia. The work to complete this assignment was performed by Fire Consultant Charles W. Feeley, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the contact point between the main battery conductor to the starter and the steel bracket above the starter.

3. The specific ignition sequence and cause of the fire was determined to be mechanical damage to the positive battery cable where the insulation had been chaffed and damaged, and an adverse electrical event occurred and ignited.

Observations

Exterior Inspection:

The exterior of the vehicle sustained no fire, heat or smoke damage.

Interior Inspection:

The passenger compartment sustained no fire, heat or smoke damage. The rear cargo area sustained no fire, heat or smoke damage.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the engine compartment. The underside of the hood was undamaged by the fire. The fuel lines and connections to the fuel rails were undamaged by the fire. The fuel lines routed along the open frame to the fuel tank were intact. The alternator was undamaged and the electrical connections were secure. The serpentine belt was intact. The battery was inspected and was undamaged. The battery tie down could not be tightened sufficiently to prevent the battery from sliding approximately 4.5 inches to the front and rear of the battery tray. The positive and negative cables had been disconnected prior to the inspection. The battery cable connectors were undamaged. The plastic loom containing the main conductors from the battery to the starter positioned on the right side of the engine sustained fire and heat damage. The positive conductor displayed adverse electrical activity at the contact point with the metal bracket used to secure the battery conductors. The positive conductor sustained a loss of mass at the contact point. The metal bracket sustained a loss of mass at the contact point. The starter was undamaged and the connections were secure. The involved LLV was not equipped with a High Energy Ignition (HEI) Distributor.

Undercarriage Inspection:

Examination of the undercarriage revealed no evidence of soot, smoke, heat or fire damage. The involved LLV was mounted on a GM frame. The fuel lines were positioned within the open frame to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. They were routed under the rear of the engine to the left side of the engine. The closed transmission was undamaged by the fire.

Fuse Panel Inspection:

The fuse panel was inspected and none of the fuses were open.

Area of Fire Origin:

The area of fire origin was determined to be on the right, mail side of the engine compartment. The point of origin was determined to be at the contact point between the main battery conductor to the starter and the steel bracket above the starter.

Contributing Factors:

A potential contributing factor was the use of plastic battery tie downs, which cannot be sufficiently tightened to prevent the battery from sliding backward and forward within the battery tray. This can cause connected electrical conductors to move and become mechanically damaged as they rub against other components and connectors within the engine compartment.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interview:

The carrier and vehicle driver was interviewed on June 16, 2016, and provided the following information:

- She arrived at work at approximately 7:30 A.M.
- She began her route at approximately 9:00 A.M.
- She did not hear or see anything unusual during the course of the day.
- While driving, she began to smell smoke.
- Several minutes later she saw smoke coming from under the hood.
- She stopped the vehicle and opened the hood.
- She saw fire in the area of the starter on the passenger side of the engine.
- She borrowed a portable fire extinguisher from a bus driver that had stopped nearby.
- She was able to extinguish the fire.

Service Records:

A review of the service records indicated that the battery of the involved LLV have been replaced on December 14, 2015. There was no other report repair work observed that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles W. Feeley

Charles W. Feeley, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

Photograph 1

A view of the fire damaged plastic loom.



Photograph 2

A view of the electrical conductor from the battery to the starter.



August 11, 2016
RCG File No. 47508271

Photograph 3

A view of the steel bracket which chaffed the conductor.



Photograph 4

A view of the battery within the battery tray.



August 11, 2016
RCG File No. 47508271

CVs



**CHARLES FEELEY, I.A.A.I., C.F.E.I., C.F.I., P. I.
FIRE CONSULTANT**

Mr. Feeley had been employed by the Baltimore City Fire Department for 35 years. In this capacity he had been involved in many different emergency positions including Fire Fighter, Lieutenant, Captain, Chief Safety Officer, Battalion Commander and Division Chief.

Mr. Feeley has completed numerous educational seminars and continuing educational courses.

Mr. Feeley investigated over 550 fires in four years as an investigator and in excess of 5,000 fires as an incident commander at fire scenes. He has given expert testimony in civil and criminal court cases. He supervised the Office of the Fire Marshal in Baltimore City. He also supervised special projects such as the Arson Task Force, juvenile fire setters program, an educational intervention program and public education programs.

At Rimkus Consulting Group, Mr. Feeley has conducted over 500 fire origin and cause determinations that include, but are not limited to, assignments involving residential, commercial, industrial, passenger and commercial vehicles, marine, farm implement/equipment, appliance and electrical equipment related fires.

Mr. Feeley has been recognized for his achievements by being the recipient of awards that include Distinguished Unit Citation, Meritorious Conduct Award, Exemplary Performance, and Distinguished Service Award.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

National Fire Academy
National Nuclear Security Administration
United States Department of Justice, New Mexico Tech.
Department of Homeland Security
National Association of Fire Arson Investigators
United States Department of Justice, Anniston AL.
National Association of Fire Investigators.
Certified Fire and Explosion Investigator, N.A.F.I Certification
Certified Fire Investigator, International Association of Arson Investigators
Licensed as a Private Investigator in the State of Delaware

EMPLOYMENT HISTORY

2006 – Present	Rimkus Consulting Group, Inc.
1970 – 2006	Baltimore City Fire Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
921 Eastwind Drive, Suite 110
Westerville, OH 43081
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

November 8, 2017

Re: RCG File No: 53602912

LLV Number: 0210426
VMF Location: 3130 Elizabeth Lake Road Waterford, Michigan
Subject: Preliminary/Final Report

On October 2, 2017, a fire occurred in a USPS LLV truck at 9915 Kingston Drive in Clarkston, Michigan. On October 11, 2017, Rimkus Consulting Group, Inc. was retained to examine LLV 0210426, VIN 1GBCS10E6M2910002. On October 18, 2017, we conducted our investigation into the origin and cause of the fire.

Our work was completed at the USPS VMF 3130 Elizabeth Lake Road in Waterford, Michigan. Our work to complete this assignment was performed by Fire Consultant W. Timothy Spradlin, IAAI-CFI. This report was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire & Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the vehicle.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination, however the progression of

the fire extended from the left/mail side rear area of the engine compartment and progressed upward and outward from this location.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of an engine fluid leak (IE: fuel, oil, transmission fluid) onto a hot engine surface as the possible cause of the fire.

Observations

Exterior Inspection:

We conducted an exterior examination in a clockwise direction. The front grill and headlights were intact. The left front mail side corner fender was fire damaged and deformed by fire. The driver side fender was fire damaged and deformed by fire. The hood was removed and laying in the cargo compartment. We reconstructed the hood, laying it in place on the fenders. The left mail side of the hood was melted and consumed by fire in a convex shape above the left side of the engine compartment. The A posts and dash were consumed by fire and collapsed into the cab. The driver's compartment roof was collapsed. The cargo area roof was partially collapsed.

Fire damage patterns on the driver side indicated fire extension from a fire in the engine compartment. The cargo area rear door was heat damaged and collapsed into the cargo area. The tail lights and turn signals were melted and collapsed into the interior. The cargo area interior was fire damaged with fire debris from the load on the floor. The mail side exterior surfaces indicated fire extension from the engine compartment. The driver side tires are inflated and intact, undamaged. The mail side rear tire was inflated, undamaged and intact. The left front mail side tire was flattened with severe fire damage and part of the inside of tire consumed by fire.

Interior Inspection:

The interior driver compartment was consumed by fire with all combustibles melted or collapsed onto the floor. The electrical system and fuse panel were completely consumed by fire and collapsed. The dashboard was collapsed and electrical circuits

fractured within that area. The mail side aluminum sorting table was partially consumed, melted and collapsed onto the floor.

Engine Compartment Inspection:

The engine was a 2.5 liter with fuel injection and standard coil ignition. The engine compartment and components was severely damaged by fire. All combustible components were severely fire-damaged and charred. The battery plastic casing was melted. Battery damage indicated heat exposure from the left mail side of the engine compartment. Oxidation patterns on the air cleaner indicated heat from the left mail side of the engine compartment.

The radiator hoses were charred and deformed by fire exposure. The aluminum inner fender well of the left mail side was fire damaged and consumed in a convex pattern indicating heat from the right toward the engine block. The aluminum bulkhead wall was consumed and collapsed on the mail side. The rubber connecting hoses between the gas line, the fuel filter and the return line on the left side of the engine were consumed by fire. The oil and transmission fluids were examined and within normal ranges and had a normal odor. The plastic brake fluid reservoir and power steering fluid reservoir were melted and heat damaged.

Undercarriage Inspection:

The undercarriage was in good condition with all components intact. The frame was an AM General replacement. The exhaust system, fuel tank, and suspension were intact in good condition. There was no excessive oil or grease observed on the undercarriage surfaces. There was melted plastic that had dripped down onto the front steering mechanisms. That was a result of the plastic dash and driver compartment components melting from above.

Fuse Panel Inspection:

The fuse panel and bulkhead wall were completely consumed by fire and collapsed, the circuits were intact with blades attached. All plastic components of the fuse panel were consumed by fire.

Area of Fire Origin:

The fire originated in the left/mail side of the engine compartment.

Interviews

On October 18, 2017, we conducted a telephone interview with the carrier driver . He stated on the date of the fire he left the Clarkston Post Office at approximately 9 A.M. He was driving on his route for approximately 2 hours prior to the fire. There was nothing unusual with no problems; the truck was running normally. Everything seemed normal; no smells, sounds, or warning lights. He estimated he made about a dozen stops and restarts of the engine for package deliveries.

He stated just before the fire, he had stopped to deliver a package. When he got into the truck and restarted the engine, there was suddenly smoke from the left side dash area extending into the cab. The engine was running but he shut it off. He saw flames from the left hood at the windshield. He got out of the truck and saw dripping burning molten material from the left mail side of the engine compartment. He called 911 and his supervisor.

Contributing Factors:

Based on the observed pattern of fire damage, the data collected and a systematic evaluation of the remaining physical evidence, within a reasonable degree of fire science certainty, the fire originated in the left/mail side of the engine compartment. We could not eliminate a failure of the fuel line system as a cause of the fire. We could not eliminate electrical arc ignition of gasoline vapors leaking from the fuel system.

Evidence Collected:

No evidence was collected.

Service Records:

On October 18, 2017, we interviewed maintenance supervisors at the Waterford VMF. Both mechanics have seen dry rotting and deterioration of the rubber hoses connecting the fuel lines to the filter and return lines on other fleet LLVs. The problem was detected during preventive maintenance. It was their opinion it occurred sooner than would seem normal. They added that the rubber hose lines must be installed carefully to avoid contact, rubbing, and/or abrasion damage against metal frame parts. They provided the past 12 months maintenance records for the LLV. The frame on the LLV was replaced 2 years ago; the new frame replacement kit included new gas lines and rubber connecting hoses.

After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance, age, and degradation may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Spradlin

William T. Spradlin, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

November 8, 2017
RCG File No. 53602912

Photograph 1
Front view.



Photograph 2
Driver side.



November 8, 2017
RCG File No. 53602912

Photograph 3
Rear and cargo area.



Photograph 4
Mail side view.



November 8, 2017
RCG File No. 53602912

Photograph 5

Hood reconstructed, damage and collapse on mail side.



Photograph 6

Driver's area.



November 8, 2017
RCG File No. 53602912

Photograph 7
Fire damaged fuse panel.



Photograph 8
Engine compartment from front driver side.



November 8, 2017
RCG File No. 53602912

Photograph 9

Engine compartment from left mail side.



Photograph 10

Undercarriage view from front.



Photograph 11

Area of fire origin left mail side of engine compartment.



Photograph 12

Area of fire origin left mail side engine from below with fuel lines and filter.



November 8, 2017
RCG File No. 53602912

CVs



**WILLIAM TIMOTHY SPRADLIN, IAAI-CFI, CI, FIT, NAFI-CFEI
Fire Consultant**

Mr. Tim Spradlin has over 35 years' experience in firefighting, law enforcement, fire, arson and bombing investigation. His fire / explosion investigation work spans over 20 years of service, and he has three related college degrees. His career includes work as a full-time fire lieutenant, captain, deputy chief and fire chief in Xenia Township, Ohio. Mr. Spradlin also served as a reserve deputy sheriff with the Greene County Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He retired from 32 years public safety work as the Chief of the State of Ohio Fire Marshal's Fire – Explosion Investigation Bureau. From January 2008 until September 2014 Mr. Spradlin was the full-time chief fire / arson investigator for Ohio. He was also the curriculum manager / instructor for the Ohio Fire Academy fire investigation programs.

Mr. Spradlin also served in the United States Air Force, where he served 4 years active duty and 26 years reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant / First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the US Army in 2007 for combat meritorious service.

He currently serves as a police officer in the Village of Yellow Springs and as a volunteer fire training officer with the Xenia Township Fire Department in Ohio. Mr. Spradlin also teaches in the Clark State Community College fire programs and the Sinclair Community College Basic Police Officer Training Academy.

Mr. Spradlin is a certified fire investigator (CFI), fire investigation technician (FIT) and certified instructor (CI) by the International Association of Arson Investigators (IAAI). He is also a certified fire explosion investigator (CFEI) by the National Association of Fire Investigators (NAFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Bachelor of Science Degree in *Organizational Management* from Wilberforce University, Xenia, Ohio
Associates Degree in *Human Resource Management*, Air University CCAF, Gunter AFS, Alabama
Associates Degree in *Fire Science Technology*, Air University CCAF, Gunter AFS, Alabama
National Fire Academy *Arson Interview, Interrogation and Courtroom Testimony* course
National Fire Academy *Executive Analysis of Fire Operations in Emergency Management*
National Fire Academy *Executive Development* Program
National Fire Academy *Executive Planning* Program
Ohio Fire Academy *Basic Fire Investigation* and *Advanced Fire Investigation* programs
USAFR *Senior NCO Leadership Development Course*, Robins AFB, Georgia
Sinclair Community College Criminal Justice Academy, Dayton, Ohio

Member of the International Association of Arson Investigators (IAAI) and of the Ohio Chapter IAAI
Member of the National Association of Fire Investigators (NAFI)
Member of the National Society of Professional Insurance Investigators (NSPII)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
92 South Street
Hopkinton, MA 01748
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

November 22, 2016

Re: RCG File No: 44802823
LLV Number: 0212864
VMF Location: 212 Fenn Street in Pittsfield, Massachusetts
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 0212864, VIN 1GBCS10A8M2912329 that was involved in a fire event. The vehicle was examined at the USPS Pittsfield Vehicle Maintenance Facility located at 212 Fenn Street in Pittsfield, Massachusetts. The fire incident reportedly occurred at 255 State Road in Richmond, Massachusetts on June 27, 2016.

In the course of our work, we examined and documented the fire damaged vehicle on July 8, 2016, and interviewed carrier/driver. Our work to complete this assignment was performed by Fire Consultant Harold W Henrich, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the operator compartment of the involved LLV.
2. The specific area of fire origin was determined to be within the fuse panel positioned on the dashboard in the operator compartment.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of an adverse electrical event involving the fuse for the hazard lamps which is a 15 amp fuse with continuous power supply. The fire originated where a super flasher had been installed along with the 15 amp fuse for the hazard lights. The super flasher was installed in March 2009.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a counter clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. No fire, thermal or smoke damage was observed on the exterior. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order.

Interior Inspection:

Examination of the interior of the vehicle revealed a well-kept unit with no fire, thermal or smoke damaged observed with the exception of the fuse panel and associated connections. The fire was contained to the fuse panel and had minimal extension to the vehicle compartment.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine. The fuel system was examined and found to be intact with no damage observed. The battery for the vehicle was located at the front right side of the engine compartment with no damage observed. The positive power cable was disconnected from the battery. The engine oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range. No fire, thermal or smoke damage was observed within the engine compartment.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire or mechanical damage. The LLV was mounted on an AM General frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The aftermarket fuel filter assembly located on the left side of the engine was equipped with a GM model fuel filter. The LLV was equipped with a GM fuel filter system. The exhaust system was intact and the engine/transmission showed some signs of leaking fluid from the pans.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained thermal damage in the upper right corner area. Eight fuses were still intact and identifiable.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated on the top right portion of the fuse panel. In this area is where the super flasher wiring is plugged into the "Factory" turn signal flasher location along with a 15amp hazard fuse. This super flasher system was installed in this LLV on March 4, 2009.

Contributing Factors:

An adverse electrical activity event or associated thermal event with the super flasher wiring in the area of origin could not be eliminated. The involved components were collected and sent to Jack R. Kennedy, III, in the Charlotte, North Carolina office for analysis.

Evidence Collected:

Exhibit A: Fuse Panel, Strobe box, toggle switch and associated strobe wiring was shipped to the Charlotte, North Carolina office.

Collected evidence was consistent with an adverse electrical event where the super flasher had been installed in the 15 amp fuse for the hazard lights which had continuous power.

Interview:

On July 8, 2016, an interview was conducted with the carrier/driver of the vehicle at the time of the fire. She reported the following information:

- She has been assigned to this LLV for several years.
- Over the past 6 months, the only issue she has had with this LLV is the starter not functioning correctly. She stated this issue had been fixed by maintenance.
- She stated that on the day of the fire, she had no electrical or mechanical issues with this LLV.
- She stated the "4-way-flashers" were on during her assigned route.

- She stated the events leading up to the fire are as follows: she was in between two mail stops when she smelled an odor. A tractor trailer had just passed her and she thought the odor was from the tractor trailer. As she was approaching her next stop, the odor got stronger and a “whisper of grey smoke” came out from the right side dash board area; she was also feeling some heat on her right leg. After noticing the smoke she immediately stopped the vehicle, put it in park, shut off the ignition switch, and grabbed all the mail from the LLV. She then called Pittsfield, Massachusetts USPS office and explained the situation to a supervisor. She stated approximately two minutes after speaking with the supervisor she observed flames coming from the emergency brake handle area, she did not get any closer to the vehicle to see exactly where the flames were originating. She stated several bystanders had stopped to assist her and they called 911.
- She stated she was not injured as a result of the fire, just “shaken up”.

Service Records:

A review of the service records for the involved LLV were did not indicate any recent repairs or service issues that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Harold W. Henrich

Harold W. Henrich, IAAI-CFI

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI

Attachments: Photographs, CVs

November 22, 2016
RCG File No. 44802823

Photograph 1
Front of the LLV.



Photograph 2
Driver side of the LLV.



November 22, 2016
RCG File No. 44802823

Photograph 3
Rear of the LLV.



Photograph 4
Passenger side of the LLV.



November 22, 2016
RCG File No. 44802823

Photograph 5
Engine compartment.



Photograph 6
Interior rear of the LLV.



November 22, 2016
RCG File No. 44802823

Photograph 7

Passenger side interior of the LLV.



Photograph 8

Driver side interior of the LLV.



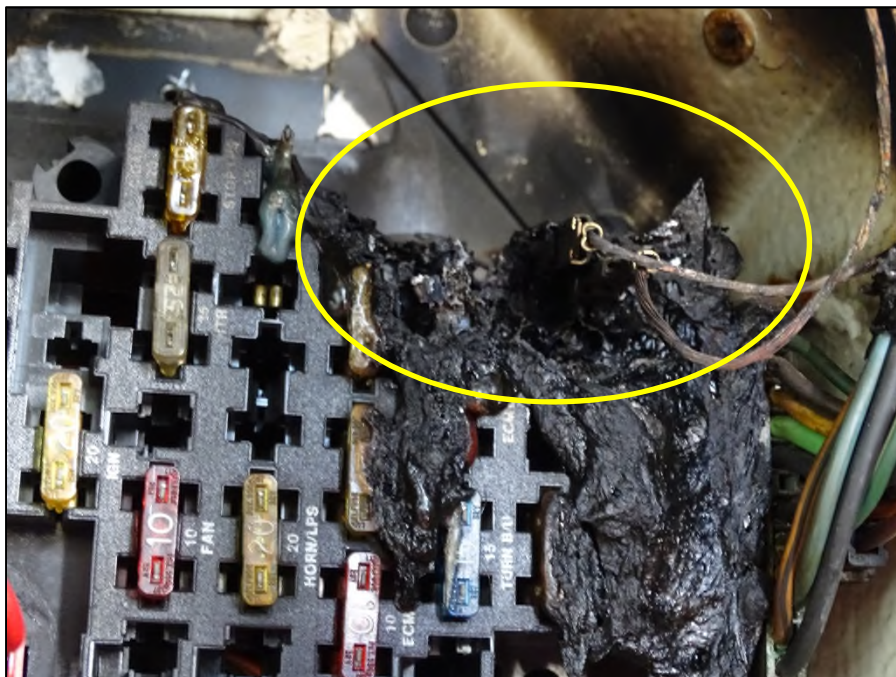
Photograph 9

Fuse panel, strobe box wire.



Photograph 10

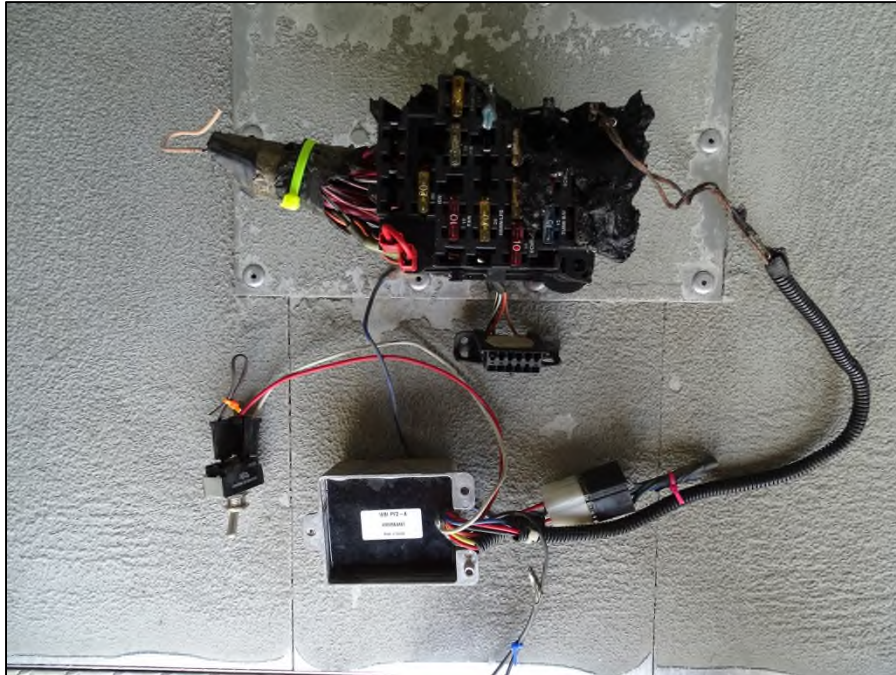
Area of origin.



November 22, 2016
RCG File No. 44802823

Photograph 11

Evidence collected; Exhibit A.



November 22, 2016
RCG File No. 44802823

CVs



HAROLD W. HENRICH, IAAI-CFI, CFEI, CVFI FIRE CONSULTANT

Mr. Henrich is a Certified Fire Investigator (IIAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and a Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators and a Certified Fire Investigator (NC-CFI) with the North Carolina Fire Rescue Commission. He has been active in the fire service for 30 years holding the positions of Firefighter, Captain, Fire Chief and Fire Marshal in both Career and Volunteer Departments.

Mr. Henrich areas of expertise is specializing in origin and cause fire investigations in both the public and private sectors involving over 500 fire causation on commercial, residential structures, vehicles and heavy construction equipment. He has completed and maintains state, national and international certifications as a Fire Investigator, Fire Instructor, Fire Inspector, Fire Officer, Fire & Life Safety Educator, Hazardous Materials, Firefighter, and completed numerous educational seminars and continuing education courses in the field of fire investigation.

Mr. Henrich while serving in the capacity of a Fire Instructor has coordinated and instructed continuing education courses within the Fire Service field and basic Fire Investigation classes.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Candidate, Columbia Southern University, Orange Beach, AL, B.S Fire Administration / Fire Investigation

International Association of Arson Investigators

Certified Fire Investigator, 2014

Expert Witness Court Room Testimony, 2014

National Association of Fire Investigators

Certified Fire and Explosion Investigator (CFEI), 2010

Certified Vehicle Fire Investigator, (CVFI), 2010

National Board on Fire Service Professional Qualification

Fire Investigator, NFPA 1033-2014, 2014

North Carolina Fire and Rescue Commission

Certified Fire Investigator, 2005

Fire Inspector Level III, 2012

Fire Life Safety Educator III, 2009

Fire Instructor II, 2001

Fire Officer II, 2005

Firefighter II, 1994

Hazardous Materials Level I, 2000

Hazardous Materials, Personal Protective Equipment, 2011

Hazardous Materials, Technical Decontamination, 2011

Hazardous Materials, Air Monitoring & Sampling, 2012



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus New York, PLLC
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, NJ 07631
(201) 368-8551 Telephone
(201) 368-8557 Facsimile
Certificate of Authorization No. 0010333

April 5, 2017

Re: RCG File No:

LLV Number: 47809211
VMF Location: 0213263
Subject: 1000 Westchester Avenue in White Plains, New York
Preliminary/Final Report

Dear

On February 11, 2017 a fire occurred in a US Postal Service vehicle at 73 Clinton Road in Bedford Hills, New York. On February 16, 2017 Rimkus Consulting Group, Inc. was retained to examine the 1990 Grumman LLV 0213263, VIN 1GBCS10A9M2912694. On March 9, 2017 we conducted a fire origin and cause examination on the vehicle at the VMF located at 1000 Westchester Avenue in White Plains, New York.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records, and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Donald E. Berg, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of origin was determined to be in and around the front left headlight assembly.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of an electrical failure within the conductors associated with the electrical wiring to the headlight assembly in the area of origin.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a counterclockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed to the front end of the LLV. The hood, windshield, and the windshield structural support were consumed during the fire event, with partial fire consumption of both fenders. The cab roof over the driver's side was consumed during the fire event. Moderate thermal and smoke damage was observed to the upper portions of the doors and sides of the box. There was no evidence to indicate that the LLV had recently been involved in a collision.

At the time of the exam, all of the LLV tires were found to be of the same make, size and manufacturer, the driver's side front tire was partially consumed during the fire event. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. The front left headlight area exhibited heat and burn patterns extending in an upward and outward progression.

Interior Inspection:

While examining the interior of the vehicle, the operator's compartment revealed severe fire damage while the cargo compartment sustained moderate smoke and heat damage. An analysis of the fire patterns in this area indicated that the fire extended into this area from the engine compartment and did not originate in the interior.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. We observed severe fire damage to the engine compartment including all combustibles

within the engine compartment. The engine compartment was examined, photographed, and documented.

The engine compartment sustained widespread and uniform fire damage. The remaining engine components were examined and all metal fuel lines were observed to be intact. All rubber fuel lines located in the engine compartment were consumed during the fire event. The battery sustained exterior thermal damage to the housing during the fire event. The positive power cables along with the battery grounding cable were located and traced to their respective origins. Each cable showed thermal damage from fire impingement with no adverse electrical activity on either cable observed. Both of the battery connectors were intact. The engine's oil and transmission fluid were examined and observed to be within their normal operating range. An examination of the ignition interrupter switch mounted behind the master brake cylinder in the engine compartment exhibited internal heat damage to the housing and wiring. Thermal electrical activity in the form of small arc-beads was observed on the wiring.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of fire damage along the bottom side of the engine as well as the sides of the engine. The involved LLV was mounted on a GM frame. The fuel lines were examined and it appeared the lines had failed during the fire progression. The fuel tank was examined and the vehicle fuel filter system was equipped with a GM filter. Both were free of fire damage. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage. We were unable to determine the status of the fuses.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated at or around the left side headlight assembly area.

Contributing Factors:

The LLV reportedly was being driven at the time of the fire. The headlamps were in the “on” position per policy. No direct adverse electrical activity associated with the wiring to the headlight was observed. Mechanical damage and wear could have contributed to the failure in the form of a chaffed electrical conductor that ignited the combustible material surrounding it.

Evidence Collected:

No evidence was collected at the time of the inspection.

Interview:

Numerous attempts to contact the Bedford Hills Postmaster to schedule an interview with the carrier were attempted with no return call. We traveled to the Bedford Hills Post office on March 9, 2017 in an attempt to speak directly with the carrier. Mr. had not returned from his delivery rounds at the time of our arrival. Information regarding the events leading up to the fire incident was from the interview taken by the supervisor directly after the fire.

Mr. reported that while making a curbside delivery on route 2 at 11:30 A.M., he noticed smoke coming from inside the left front wheel well. He exited the vehicle and observed that the engine compartment was on fire. A witness notified the Bedford Hills Fire Department. Mr. reported that he had not experienced any major mechanical problems with the vehicle prior to the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the fire incident.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NEW YORK, PLLC

Donald E. Berg

Donald E. Berg, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers
Technical Fire Manager

Attachments: Photographs, CVs

April 5, 2017
RCG File No. 47809211

Photograph 1
View of fire damaged LLV.



Photograph 2
View of damage to engine and passenger compartment.



April 5, 2017
RCG File No. 47809211

Photograph 3

View of area of origin surrounding the left side headlight assembly.



Photograph 4

View of fire damaged remains of Ignition Interrupter switch located on opposite side of engine compartment behind master brake cylinder.



April 5, 2017
RCG File No. 47809211

CVs



DONALD E. BERG, IAAI-CFI, CFEI, CFII FIRE CONSULTANT

Mr. Berg is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) with the National Association of Fire Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). Mr. Berg is a Licensed Private Investigator in the state of New York, New Jersey and Connecticut. He has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, marine, vehicles and heavy construction equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Berg has testified on numerous occasions involving the investigation of fires in New York and Connecticut.

Mr. Berg entered the field of fire service in 1981. His professional career includes thirty-three years of experience in fire suppression, building inspection, code enforcement, hazardous material, and fire and explosion investigations. He was an active member of the Connecticut Fire Marshals Association, New England Fire Marshals Association and a member of the Stamford Connecticut Arson Task Force. He served as a Deputy Fire Marshal and Fire Lieutenant in the City of Stamford Connecticut for more than twenty-eight years.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

State University of New York, Purchase, New York Bronze Sculpture, 1986
State of Connecticut, Meriden, Connecticut Fire Marshal Certification Program, 250 hours, 1982
Philadelphia College of Art Philadelphia, Pennsylvania Illustration, 1980
Rhode Island School of Design Providence, Rhode Island, Illustration, 1978

Certifications:

International Association of Arson Investigators - Certified Fire Investigator # 23-020138
National Association of Fire Investigators (NAFI) Certified Fire and Explosion Investigator (CFEI)
National Association of Fire Investigators (NAFI) Certified Fire and Explosion Investigator Instructor (CFII)
State of Connecticut Certified Fire Service Instructor
United States Coast Guard Aux ID # 1238260 FSO-HR SR1-12-08
United States Coast Guard Auxiliary Certified Vessel Examiner
United States Coast Guard Auxiliary Instructor
United States Coast Guard Auxiliary Fingerprint Technician

Licenses:

State of Pennsylvania Licensed Private Investigator # MD5562012
State of Connecticut-Licensed Private Investigator # FA-2508
State of New York-Licensed Private Investigator #11000154190
State of New Jersey –Licensed Private Investigator # 8253

Training:

IAAI Process of Elimination, 3 Hours, 2015
IAAI Insurance and Fire Investigation, 4 Hours, 2015
IAAI Investigating Vehicle Fires Live Burn 16 Hours, 2013



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
92 South Street
Hopkinton, Massachusetts 01748
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

January 3, 2019

Re: RCG File No: 44804101
LLV Number: 0214889
VMF Location: 330 Chochitaute Road Farmingham, Massachusetts
Subject: Preliminary/Final Report

Dear

A fire reportedly occurred on November 21, 2018, involving a 1991 Chevrolet LLV located at the Hudson, Massachusetts Post Office. The fire occurred at 14 Michigan Drive in Hudson, Massachusetts. The LLV last was operated by the carrier Mr. Paul Smith.

Rimkus Consulting Group, Inc. was retained to examine LLV 0214889, VIN 1GBCS10A8M2914470. This LLV was manufactured by General Motors in 1991. This report was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

In the course of our work, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the area of the driver's side dashboard of the vehicle.
2. The specific area of origin could not be conclusively determined at the time of our examination due to the severe fire damage to the driver's side and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the vehicle and the lack of remaining physical evidence for examination; however a failure of the Rheostat headlight switch could not be eliminated.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The fire was confined to the driver's side with heat and smoke damage to the cargo area. A hole had been burned through the roof in the area above the driver's area. The windshield had broken during the fire as well as the two door windows. The left and right side showed smoke damage near the front doors and near the rear vents. The cargo door had sustained smoke and heat damage due to the door being opened by the carrier who removed the mail from the cargo area. All four tires were intact and undamaged by the fire. The rear cargo door springs had been damaged during the fire and we were unable to open the rear cargo door.

Based on the fire patterns observed, it was determined the fire initiated within the interior compartment in the area of the driver's side dashboard then progressed throughout the interior compartment and through the windshield and bulkhead.

Interior Inspection:

The interior of the driver's compartment had been damaged by the fire. All of the combustible materials in the dashboard had been consumed by the fire. The area located at the base of the bulkhead between the interior and the engine compartment had been consumed by the fire. The steering wheel and steering column had been consumed by the fire. The cargo area was damaged by the smoke and heat. This damage was less severe at the rear of this area and progressively increased towards the front of the area. An approximately 1x3 foot hole had been burned through the roof over the driver's side. The area around the engine bump out had an approximately 1x2 foot hole burned through the aluminum near the bottom edge. The fire had damaged some of the engine wiring at the rear of the engine.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment had sustained damage to the area rear of the engine. The front of the engine had no fire damage. The radiator and front grill had no damage. The hood release had sustained damage and was partially opened at the inspection time.

The battery for the vehicle was located at the front driver's side of the engine compartment. The battery, battery terminals, and battery cables were examined and found to be damaged by fire; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine

oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle, except for a limited area below the rear of the engine compartment that appears to have been caused by drop down from above. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head. All four tires were intact.

Fuse Panel Inspection:

The plastic around the fuse panel had sustained severe fire damage. The panel had melted and several of the fuses were covered with melted plastic. The fuse panel sustained severe fire damage. However, no evidence of adverse electrical activity was noted. The respective wiring harness associated with the fuse panel was inspected and did not reveal any unexpected damages from a fire with this intensity.

Area of Fire Origin:

Based on the observed patterns of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the driver's side dashboard area of the vehicle. The specific area of origin was located in the dashboard possibly in the area of the Rheostat headlight switch. The entire dashboard was consumed by the fire and the electrical conductors in the area showed signs of adverse electrical activity that were in the area of a splice in the wire.

Potential Contributing Factors:

The Rheostat headlight switch was replaced in September of 2018. It's possible the crimp was not tight enough of the replacement conductors, or the replacement conductors were not of the same diameter creating a high-resistance connection or the new switch may have been defective when it was installed.

Evidence Collected:

No evidence was collected.

Interviews:

It was reported by the carrier, Mr. that he was on his route for approximately 1 to 2 hours. When he stopped at a regular stop he noticed a puff of white smoke coming from the vent on the right side. They thought it was dust of some other issue. When he got to his next stop, he noticed the smoke again and went to the house to call the office to report the problem. The homeowner looked out and saw smoke coming from the vehicle, and Mr. went back to the vehicle and noticed the dashboard was bubbling. He then started to remove the mail until the smoke kept him out of the vehicle. He had the heat on while the vehicle was running. This is his regular vehicle that he uses for his route. He stated that he had to jump start the vehicle 1 to 2 weeks prior to the fire. The vehicle did not lose power and have any other issues that day. He had the headlights on and the four-way flashers were on also.

Service Records:

A review of the provided service records for the involved LLV was conducted. On September 17, 2018, the vehicle had the headlight switch replaced along with the super flasher module. On November 10, 2018, a headlamp was installed by R&L from Hudson, Massachusetts.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Shawn P. Brecken

Shawn P. Brecken, IAAI, CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

January 3, 2019
RCG File No. 44804101

Photograph 1
Front of vehicle.



Photograph 2
Driver's side.



January 3, 2019
RCG File No. 44804101

Photograph 3
Rear of vehicle.



Photograph 4
Cargo side.



January 3, 2019
RCG File No. 44804101

Photograph 5
Fuse Block.



Photograph 6
Engine area.



January 3, 2019
RCG File No. 44804101

Photograph 7
Battery.



Photograph 8
Dashboard.



January 3, 2019
RCG File No. 44804101

Photograph 9
Dashboard area of origin.



January 3, 2019
RCG File No. 44804101

Curriculum Vitae



SHAWN P. BRECKEN EMT, CFI, CFIE, CVFI FIRE CONSULTANT

Mr. Brecken's professional career includes 35 years with the Marlborough Fire Department in the City of Marlborough, MA. In that capacity he has been involved in many different emergency services including IAAI Certified fire investigator and front line supervisor. His duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Brecken has an Associate Degree in Fire Science from Quinsigamond Community College. He maintains certifications as a fire investigator.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.S – Fire Science - Quinsigamond Community College
EMT – Emergency Medical Technician
CFI – Certified Fire Investigator – IAAI
CFIE – Certified Fire Explosive Investigation - NAFI
CVFI - Certified Vehicle Fire Investigator NAFI
MA CFI- Certified Fire Investigator
International Association of Arson Investigator – Member
National Association of Fire Investigators – Member
International Association of Arson Investigator, MA Chapter – Member
Metro Fire/Arson Investigation Association – Member

EMPLOYMENT HISTORY

2017 – Present	Rimkus Consulting Group, Inc.
1984 – 2017	Marlborough Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
3620 Horizon Drive, Suite 200
King of Prussia, PA 19406
(888) 623-1460 Telephone
(610) 941-1288 Facsimile

February 17, 2017

Re: RCG File No: LLV
Number:

47702350
0215353
Inspection Location: 635 Mearns Road in Warminster, Pennsylvania
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 0215353, VIN 1GBCS10AOM2914866. The vehicle was examined at the J & J Auto & Truck Repair located at 635 Mearns Road in Warminster, Pennsylvania. The fire incident reportedly occurred at Freedoms Way and Easton Road in Warrington, Pennsylvania.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on January 11, 2016. Our work to complete this assignment was performed by Fire Consultant Jonathan Sivils, IAAI-CFI. This report and case was reviewed by Mr. Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the interior operator compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the left side of the dashboard where the headlamp switch was positioned.

3. The specific ignition sequence and cause of the fire was determined to be a failure of the headlamp rheostat switch, which overheated and ignited surrounding combustible materials.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. Minor smoke staining was visible in the center of the windshield. All remaining sides of the vehicle revealed no fire damage.

Interior Inspection:

Examination of the interior of the vehicle revealed the only fire damage had occurred to the top left side of the dashboard area at the headlamp switch. The electrical wiring was examined and did not display any signs of adverse electrical activity. Examination of the headlamp switch components revealed the switch was melted and revealed signs of overheating. Examination of the electrical wiring that transverse behind the dashboard was examined and revealed no signs of obvious failure. The failure was determined to be overheating involving the rheostat switch.

Engine Compartment Inspection:

The engine compartment was examined. No fire damage was noted. The fuel system was examined and found to be intact with no damage noted. The fuel filter was intact and located along rear of the engine near the fire wall. The fuel system was the GM model. The battery for the vehicle was located at the front right side of the engine compartment and had no fire damage. Based on the fire patterns, the engine compartment was not the area of origin. The LLV was not equipped with a High Energy Ignition (HEI) distributor.

Undercarriage Inspection:

Examination of the undercarriage revealed no damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks

Fuse Panel Inspection:

Examination of the fuse panel revealed the 15 amp fuse for the headlamps was partially melted. None of the fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the top left side of the dashboard area of the vehicle. The specific area of origin is the headlamp switch.

Contributing Factors:

Issues with the power to the headlamp switch in the area of origin could not be eliminated. The involved components were collected and sent to Jack Kennedy in the Charlotte, NC office for potential analysis.

Evidence Collected:

- 1- Headlamps switch assembly and associated wiring
- 2- 15 Amp fuse

The items will be held in evidence for 90 days in the event a laboratory analysis needs to be conducted.

Interviews:

On January 11, 2017, an interview via telephone was conducted with the carrier/ driver of the vehicle at the time of the fire. Mr. reported the following information:

- He was driving the vehicle back to the post office when he smelled smoke.
- He said it smelled like plastic burning from inside the dashboard.
- He pulled the vehicle off the road and saw small flames and smoke coming from the dashboard on the left side.

Service Records:

A review of the service records for the involved LLV was conducted. According to the provided records, the headlamp switch was repaired on July 21, 2017, by a vendor shop. There were no other listed repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jonathan K. Sivils

Jonathan K. Sivils, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

February 17, 2017
RCG File No. 47702350

Photograph 1
Front left of vehicle.



Photograph 2
Right side of vehicle.



February 17, 2017
RCG File No. 47702350

Photograph 3
Left rear of vehicle.



Photograph 4
Engine compartment.



February 17, 2017
RCG File No. 47702350

Photograph 5
Drivers side interior.



Photograph 6
Melted dashboard.



Photograph 7

Melted dashboard near head lamp switch.



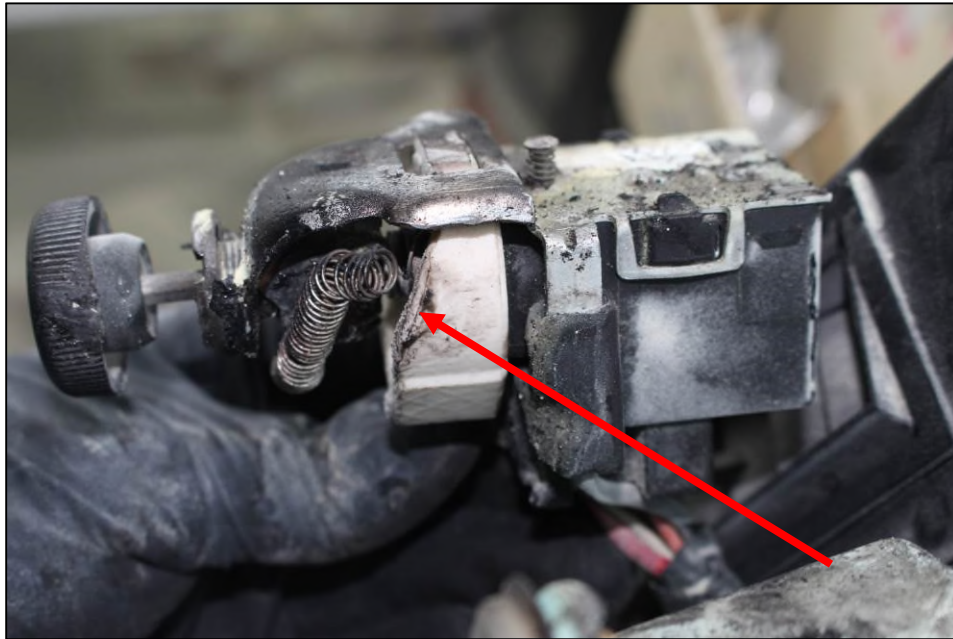
Photograph 8

Headlamp switch inside dashboard.



Photograph 9

Headlamp switch removed from dashboard. Damage alongside near spring.



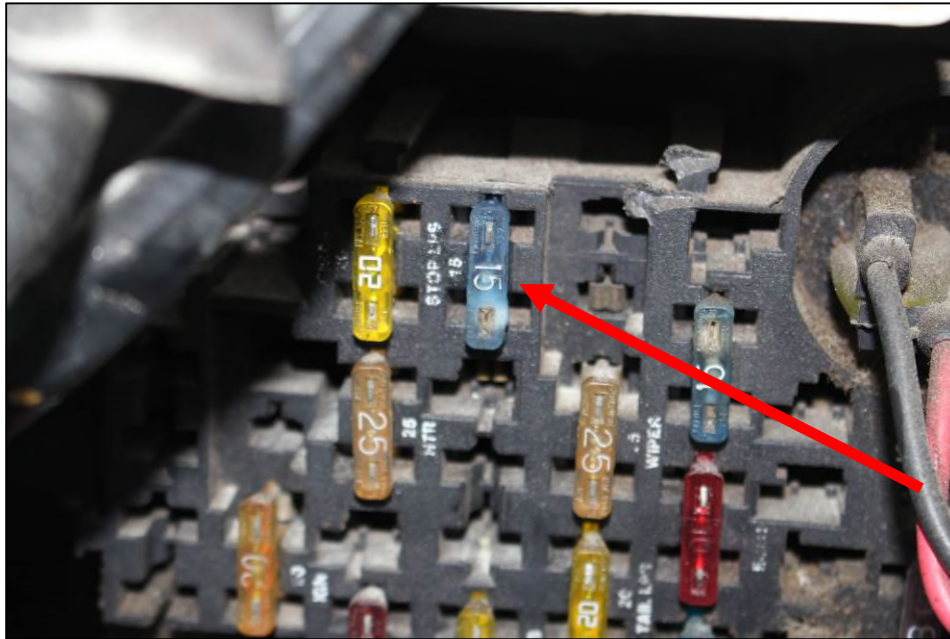
Photograph 10

Headlamp switch removed from dashboard.



February 17, 2017
RCG File No. 47702350

Photograph 11
Damaged 15 Amp fuse.

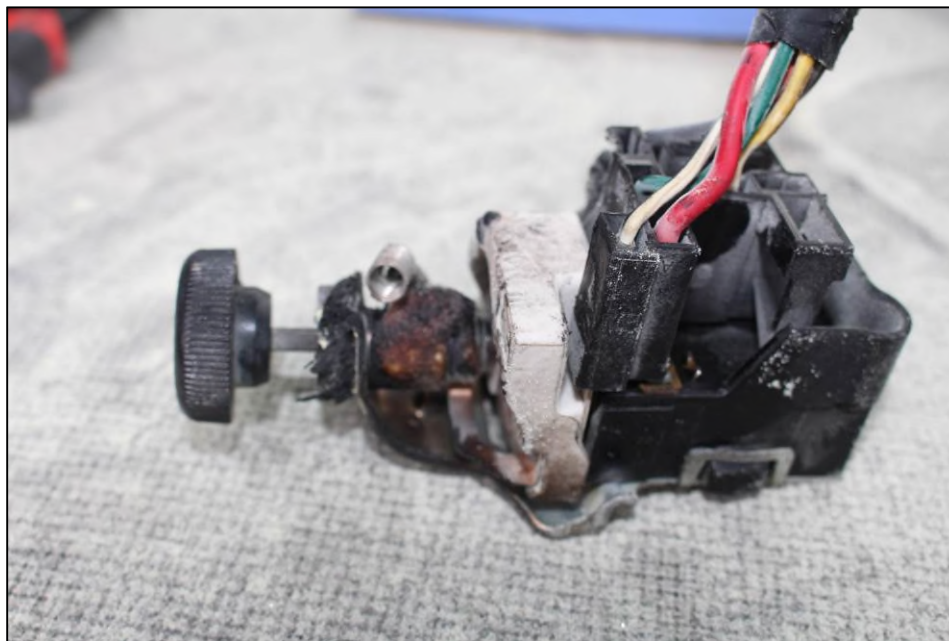


Photograph 12
Damaged/melted to fuse.



Photograph 13

Headlamp switch removed from dashboard.



Photograph 14

Headlamp switch removed from dashboard.



February 17, 2017
RCG File No. 47702350

CVs



Jonathan Sivils, IAAI-CFI, FIT, CFEI Fire Consultant

Mr. Sivils is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, as well as a Fire Investigation Technician (IAAI-FIT) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). He also holds an Associate of Science Degree in Fire Protection Technology. In a career spanning more than 25 years in the fire service, he has investigated and determined the origin and cause of more than 800 fires, to include commercial structures, residential structures, vehicles, marine and heavy equipment. He has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Sivils is a court-qualified expert witness in Criminal and Civil proceedings. Mr. Sivils has extensive training in fire and criminal investigations.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S Fire Protection Technology – Americus University, Washington D.C. – 2002
Bucks County Fire Chiefs and Firefighters Association
Bucks County Fire Marshal Association
International Association of Arson Investigators
National Association of Fire Investigators
National Fire Protection Association
Pennsylvania Association of Arson Investigators

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2012 – 2015	Donan Engineering Company, Inc.
2007 – 2012	Bucks county Fire Marshal Office, Bucks County, Pa
2005 – 2007	U.S. Department Of Defense Fire and Emergency Services
2009 – 2010	NEFCO Fire Investigations, Philadelphia, Pa
2003 – 2005	U.S. Department of Homeland Security
1998 – 2003	U.S. Department Of Defense Fire and Emergency Services
1993 – 2010	Penndel Fire Company, Penndel, Pa



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
8 Greenway Plaza, Suite 500
Houston, Texas 77046
Telephone: (800) 580-3228

Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2019

July 31, 2019

Re: RCG File No: 100008205
LLV Number: 0215508
VMF Location: 1530 Greens Mark Drive Houston, Texas
Subject: Preliminary/Final Report

Dear

On July 1, 2019, a fire occurred involving LLV 0215508 on 9214 Appin Falls Drive in Spring, Texas. On July 12, 2019, Rimkus Consulting Group, Inc. was retained to examine LLV 0215508.

On July 18, 2019, we conducted an examination of the LLV at the Houston, Texas vehicle maintenance facility located at 1530 Greens Mark Drive in Houston, Texas. In the course of our work, we examined the vehicle, excavated fire debris and documented with photos. Our work to complete this assignment was performed by Fire Consultant Charles A. Curreri, IAAI-CFI (V). This report and case was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was around the conductors that serviced the oil pressure sensor and the surrounding ground conductors.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of mechanical damage of the insulation of an energized conductor servicing the oil pressure sensor contacting ground conductors and energizing them and causing a ground fault.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. We observed extensive fire and heat damage to the exterior of the vehicle with the greatest degree of direct fire damage at the front engine compartment. The front body components had sustained extensive damage. The rear body components were identifiable with a lesser degree of fire and heat damage as compared to the front engine compartment.

Interior Inspection:

The interior of the vehicle had sustained extensive direct fire and heat damage with the rear of the vehicle sustaining a lesser degree of fire and heat damage as compared to the front passenger compartment of the vehicle. We observed combustible materials in the form of undelivered mail on the floor of the vehicle cargo compartment at the rear of the vehicle. The mail had sustained some fire damage but was still identifiable. The front driver's compartment of the vehicle had been consumed to near completion as a result of the fire. There was no physical evidence observed on the interior of the LLV that would have caused or contributed to the cause of the fire.

Engine Compartment Inspection:

The engine compartment had sustained significant direct fire and heat damage with the combustible components having been consumed toward the mid-rear bulkhead area. The metal components in the engine compartment had sustained a greater degree of fire and heat exposure on the bulkhead area of the vehicle. The engine oil filter was examined. The filter was in place and tight. The oil dip stick was examined. The engine contained fluid. There were obvious electrical arc failures identified that could have been causative of this fire.

An examination of the engine block was conducted. We observed conductors that exhibited areas where insulation had mechanical damage and an area where an arc event occurred. Based on the fire patterns observed, the mid-bulkhead of the engine within the engine compartment was determined to be the area of origin. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was a fuel injected throttle body design.

Undercarriage Inspection:

The vehicle was elevated and we examined the undercarriage of the vehicle. We observed no fire damage to the undercarriage of the vehicle. The fuel lines were present and intact. We observed fire damage patterns extending from the upper area of the engine toward of the vehicle. The LLV was mounted on a GM frame.

Fuse Panel Inspection:

We examined the fuse panel. It was completely melted and destroyed by heat. We could not determine the status of the electrical fuses or systems.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment where the energized conductor to the oil sensor contacted ground conductors and an arc event occurred.

Potential Contributing Factors:

Once the conductor's insulation ignited it spread to other non-synthetic components to include fuel lines causing further spread of the fire.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

On Monday July 1, 2019, the carrier called the station at 1538 and reported that her LLV was on fire. The carrier did call 911. The carrier stated that the LLV stopped once early that day. The carrier stated that when the LLV stopped on her at 9214 Appin Falls, she just restarted the LLV then observed white smoke coming from the engine area, then observed fire coming from the engine compartment. The carrier opened the cargo door to remove items and moved away from the vehicle.

Service Records:

A review of the vehicle maintenance records for LLV 0215508, provided by the VMF in Houston, Texas, reflected that the last preventative maintenance that was performed on the vehicle was on April 17, 2019. The mileage at the time of the last preventative maintenance was approximately 108,206. No recent work was noted in the area the fire originated.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles A. Curreri

Charles A. Curreri, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1

Carrier front corner view.



Photograph 2

Letter side front corner view.



Photograph 3
Rear view of LLV.



Photograph 4
Area of the fire's occurrence.



Photograph 5
Undercarriage view of LLV.



Photograph 6
Interior compartment from engine compartment area.



Curriculum Vitae



Charles A. Curreri, CFI, CVFI

Senior Consultant
Gulf Coast Region

Background

Mr. Curreri holds a B.S. in Emergency Management Services Administration. He is also a Certified Fire Investigator and a Certified Vehicle Fire Investigator with the International Association of Arson Investigators and a licensed private investigator in Texas and Louisiana.

Mr. Curreri has over 27 years in fire service, with 16 years as a senior investigator in the arson unit, experience in the field of advanced technical investigations, including a combination of field and management assignments in both small and large-scale fire and explosion property losses, fire death and injury cases, product defects and liability cases, arson for fraud investigations and vehicle fires.

Specific areas of expertise include primary responsibility for direct management and follow up investigation cases where origin, cause and responsibility of fire and explosions are at issue. Past assignments involved local, county, state and federal agencies investigations in residential, commercial, industrial marine, chemical and manufacturing plants and warehouses, heavy equipment, vehicles, product liability and injury/death related fires and explosions.

Consulting expertise includes evaluation of criminal and litigation related matters involving the cases areas described above, as well as explosions with improvised devices and high explosives, fire code and standards compliance, fire detection and response systems, investigation of fraud related incidents (state and federal).

Contact Information

(713) 621-3550
ccurreri@rimkus.com

1431 Greenway Drive
Suite 900
Irving, TX 75038



Rimkus Consulting Group, Inc.
2630 Elm Hill Pike, Suite 130
Nashville, TN 37214
(888) 235-7423 Telephone
(615) 883-4118 Facsimile

June 9, 2017

Re: RCG File No:

LLV Number: 47305158
VMF Location: 0215900
Subject: 707 Chestnut Street in Nashville, Tennessee
Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 0215900 with Vehicle Identification number (VIN) 1GBCS10A0M2915404. The vehicle was examined at the USPS Nashville Vehicle Maintenance Facility located at 707 Chestnut Street in Nashville, Tennessee. The fire incident reportedly occurred at 3991 Dickerson Pike in Nashville, Tennessee on May 5, 2017.

In the course of our work, we examined and documented the fire damaged vehicle on May 15, 2017. We were unable to interview the carrier despite verbal and email requests to the Manager of Customer Service, to speak with the carrier operating the vehicle at the time of the fire. Our work to complete this assignment was performed by Eastern Region Fire Manager John R. Farill, IAAI-CFI (V). This report and case was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator's compartment of the involved LLV.

2. The specific area of fire origin was determined to be at the rheostat headlamp switch positioned in the left side of the dashboard.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side.

Fire patterns were observed on the hood and the windshield had been consumed by the fire on the driver's side. There were heat patterns observed on the cowling between the hood and windshield. Fire patterns were observed at the "A" pillar/window area that extended to the area located over the driver's door. Smoke and heat patterns were observed on the rear of the vehicle on the rear roll-up door. Smoke staining was observed around the passenger side door of the vehicle.

The rear cargo area, both side doors and all four tires were intact. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred in and around the dashboard area on the driver's side. The majority of the combustible materials in and around the dashboard area had been consumed during the fire. The fire was localized to the front area of the vehicle and did not progress into the cargo compartment. Burned remains of the headlamp switch assembly were found on the driver's side floorboard.

Engine Compartment Inspection:

The engine compartment was examined. No fire or heat damage was observed. The fuel filter was intact and located along the rear of the engine near the mail side of the transmission. The fuel system was examined and found to be intact and observed with

no fire damage. The fuel filter was observed with no fire damage. The fuel system was the GM model. The battery for the vehicle was located at the front right side of the engine compartment and had no fire damage. The engine oil and transmission fluid were examined and observed to be within their normal operating range.

An examination of the engine block was conducted. No fire damage was observed to the engine block. No internal failures of the engine were observed.

Undercarriage Inspection:

Examination of the undercarriage revealed no damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact. The transmission had a class 3 (drops showing) leak at the rear of the fluid pan.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage. The fire damage observed was a result of the fuse panel being exposed to the fire.

Area of Fire Origin:

Based on our observations it was our opinion the area of fire origin was in the driver compartment on the left side of the steering column at the headlight dimmer switch. Fire damage was limited to melting and some char to the plastic switch body and adjacent electrical circuits.

Contributing Factors:

Issues with the headlamp switch in the area of origin could not be eliminated. The involved components were collected and sent to Technical Fire Manager David R. Meyers, IAAI-CFI in the Charlotte, North Carolina office for analysis.

Evidence Collected:

Exhibit 1: Headlamp switch assembly

Exhibit 2: Fuse panel with fuses

Interview:

An interview was not conducted with the carrier who was operating the LLV at the time of the fire. A phone call was placed to Mr. stating who we were, and that we needed to speak with the carrier regarding the fire event. Mr. refused to provide me with the carrier's name or a contact phone number. He stated that he

would have the carrier call me. We also sent Mr. an email during the phone conversation requesting to have the carrier contact us regarding the fire. An additional email was sent to Mr. requesting the carrier to call. Technical Fire Manager was advised of the situation and placed a request for the carrier to call us regarding the fire. As of May 19th, no phone call or email correspondence had been received from the carrier or Mr. We were advised that the carrier is now on extended medical leave and cannot be contacted.

Service Records:

A review of the provided service records for the involved LLV was conducted. According to the maintenance records for the vehicle, it had multiple tags for headlight switch failures. The LLV had a service tag the morning prior to the fire for inoperable headlights. The next scheduled service date was for May 2017.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

John R. Farill

John R. Farill, IAAI-CFI (V)
Eastern Region Fire Manager

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

June 9, 2017
RCG File No. 47305158

Photograph 1

A view of the front of the LLV.



Photograph 2

A view of the driver's side.



June 9, 2017
RCG File No. 47305158

Photograph 3

A view of the rear area.



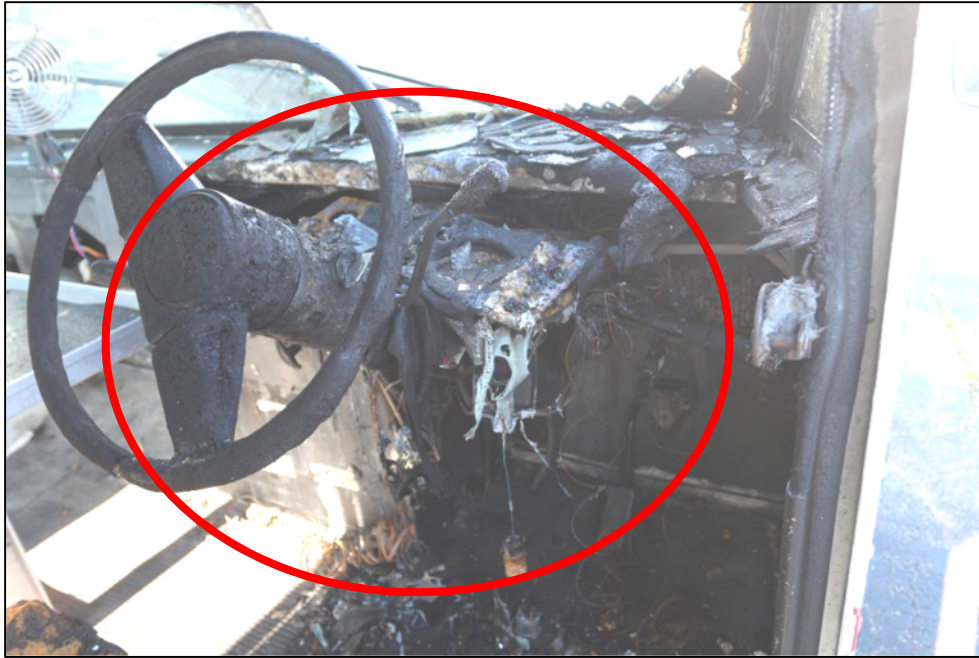
Photograph 4

A view of the mail side.



Photograph 5

A view of the area of origin (head lamp switch area).



Photograph 6

A view of the headlamp switch found in the debris on the floorboard.



Photograph 7

A view of the damaged headlamp switch.



Photograph 8

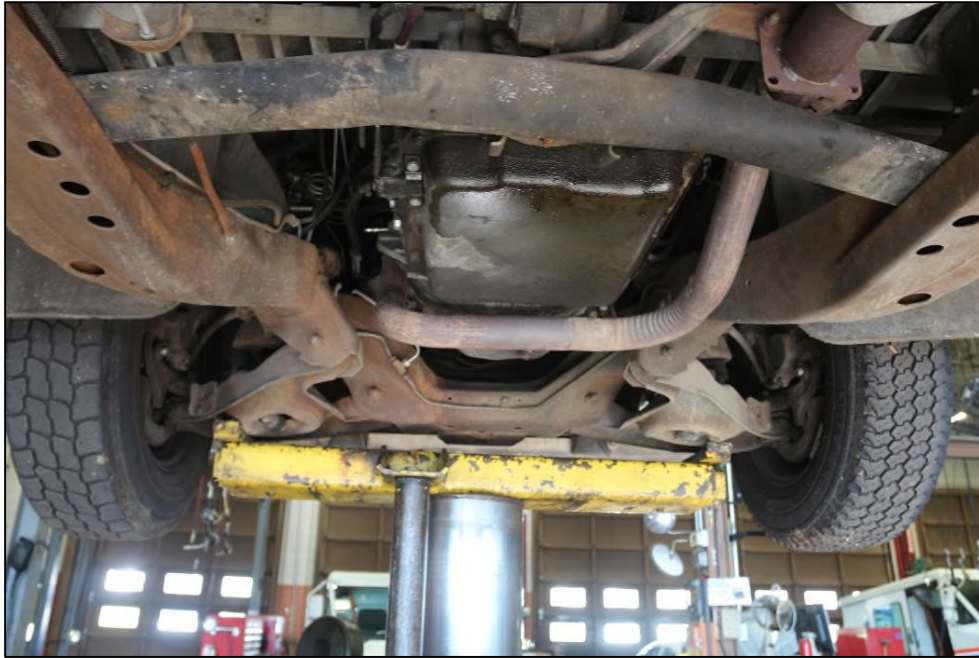
A view of the undamaged engine compartment.



June 9, 2017
RCG File No. 47305158

Photograph 9

A view of the undercarriage area.



Photograph 10

A view of the undamaged, in-line fuel filter.



June 9, 2017
RCG File No. 47305158

CVs



**JOHN R. FARILL, IAAI-CFI
FIRE DIVISION MANAGER, EASTERN REGION**

Mr. Farill started his public safety career as a police officer in 1984 before transferring to the Palm Beach County Fire Rescue as a Fire Investigator in 2002. As a Palm Beach County fire investigator, he performed fire origin and cause investigations, interview and interrogation of witnesses and suspects, processing of evidence and criminal investigations.

As the lead investigator, Mr. Farill's forensic experience encompasses investigation of more than 850 fires involving fire and explosion causation in industrial settings, residential and commercial structures, vehicles, marine vessels, aircraft and wildland fires. Areas of expertise include management of fire scene analysis, evidence and data collection, monitoring of destructive and non-destructive testing, investigative interviews, scene photography, accelerant testing, and ICC and NFPA fire code compliance. He has provided legal depositions and court testimony in support of legal and technical findings as an expert witness.

Mr. Farill is an IAAI-Certified Fire Investigator, an NFPA Certified Fire Inspector, Florida State Division of State Fire Marshal Fire Investigator II, Municipal Fire Safety Inspector and a Fire Instructor 1. He has received his Pro Board certification through the National Board on Fire Service Professional Qualifications as a Fire Investigator, NFPA 1033. He instructs Fire Origin and Cause classes for college.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Commission on Criminal Justice Standards and Training – Law Enforcement Recruit Training 11/87

Florida Division of State Fire Marshal – Florida State Firefighter II 1/2002

Florida Division of State Fire Marshal – Municipal Fire Safety Inspector 10/2002

Florida Division of State Fire Marshal – Fire Service Instructor 9/2007

Florida Division of State Fire Marshal – Fire Service Investigator II 9/2007

International Association of Arson Investigators – Certified Fire Investigator 11/2006

Florida Department of Agriculture & Consumer Services – Private Investigator 9/2007

Gold Coast Forensic Association

International Association of Arson Investigators

Florida Fire Marshal's and Inspectors Association

EMPLOYMENT HISTORY

2011 – Present

Rimkus Consulting Group, Inc.

2002 - 2011

Palm Beach County Fire Rescue

2001 - 2002

City of Greenacres Public Safety

1987 – 2001

Florida Fish and Wildlife Conservation Commission

1986 - 1987

City of Gulf Breeze Police Department

1984 – 1986

Escambia County, Florida, Sheriff's Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
N19 W24400 Riverwood Drive, Suite 350
Waukesha, Wisconsin 53188
(866) 746-5871 Telephone
(630) 321-1847 Facsimile

September 20, 2018

Re: RCG File No: 52300106
LLV Number: 0216003
VMF Location: 341 West Saint Paul Avenue Milwaukee, Wisconsin
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 0216003, VIN 1GBCS10A8M2915554. The vehicle was examined at the USPS Milwaukee Vehicle Maintenance Facility located at 341 West Saint Paul Avenue in Milwaukee, Wisconsin. The fire incident reportedly occurred at 8490 Fleet Avenue in Menomonee Falls, Wisconsin on August 4, 2018.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on August 27, 2018. Our work to complete this assignment was performed by Fire Consultant David A. Mager, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 Standard for "Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment on the left side area of the engine.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a leak in the fuel injector throttle body and the atomized gasoline vapor coming in contact with a competent ignition source, in the immediate vicinity of the exhaust manifold.
5. The rear interior storage mail/compartment was not involved with this fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. There was extensive fire damage to the front portion of the vehicle. The left front fender was consumed by fire. Burn patterns indicated that the fire extended into the passenger compartment from the engine compartment. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured.

Interior Inspection:

Examination of the interior of the vehicle revealed extensive fire damage throughout. The steering column had collapsed. The dashboard had been consumed by fire. The left side of the firewall had a large opening where the heater core would have been. Burn patterns within the interior indicated that the fire entered the passenger compartment from the engine compartment.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L, fuel injected with 1 fuel injector. The vehicle had a standard ignition coil. The remains of the battery were located at the right front side of the engine compartment. The battery was significantly damaged by fire. We examined the conductors from the battery and observed no visible electrical activity. Burn patterns indicated the battery was attacked by the fire and not the cause. We examined the starter and observed it to be intact with no adverse electrical activity. The starter was eliminated.

Fire damage in the engine compartment was more extensive on the left side of the vehicle. We examined the electrical conductors and observed no adverse electrical activity. We observed that the rubber fuel lines had been consumed by the fire. Burn patterns on the left side of the engine indicated the fire extended up from the exhaust manifold and pipe. We examined the exhaust pipe. We observed patterns indicating a liquid had run down the exhaust pipe.

Undercarriage Inspection:

Examination of the undercarriage revealed fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure up to where they entered the frame rail. The exhaust system was intact.

Fuse Panel Inspection:

The fuse panel was consumed by fire.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment on the left side of the engine.

Potential Contributing Factors:

A fuel leak from the fuel lines may have allowed gasoline to come into contact with the hot exhaust manifold and pipe causing a hot surface ignition.

Evidence Collected:

No evidence was collected.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records it was determined that maintenance work had occurred on the vehicle July 30, 2018, at which time the starter was replaced. The starter was eliminated as a potential cause for this fire. There was no indication of maintenance performed on the fuel lines in the provided service records.

Interview

An interview with the supervisor provided the following information:

- The carrier had driven the LLV about 1 ½ blocks from the post office.
- She reported that the vehicle kept dying.
- She reported seeing small puffs of smoke from the engine compartment.
- Mr. drove a replacement LLV to her and exchanged vehicles.
- While Mr. was driving the LLV back to the post office, it died about a half block away.
- He observed smoke coming from under the hood and thought the radiator was smoking.
- He walked back to the post office and went inside to call for a tow truck.
- The carrier saw the LLV smoking and called the post office to report it.
- Someone grabbed a fire extinguisher and ran down the block to try to put the fire out.
- The fire was too intense by the time they got there.
- Mr. called 911.
- Mr. stated that there were no warning lights or buzzers when the vehicle died.
- Mr. stated that flames were first observed near the center of the engine compartment hood at the windshield.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Mager

David A. Mager, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curricula Vitae

September 20, 2018
RCG File No. 52300106

Photograph 1

Overall view of the LLV.



Photograph 2

Overall view of the engine compartment.



September 20, 2018
RCG File No. 52300106

Photograph 3

Overall view of the passenger compartment.



Photograph 4

Patterns on exhaust pipe.



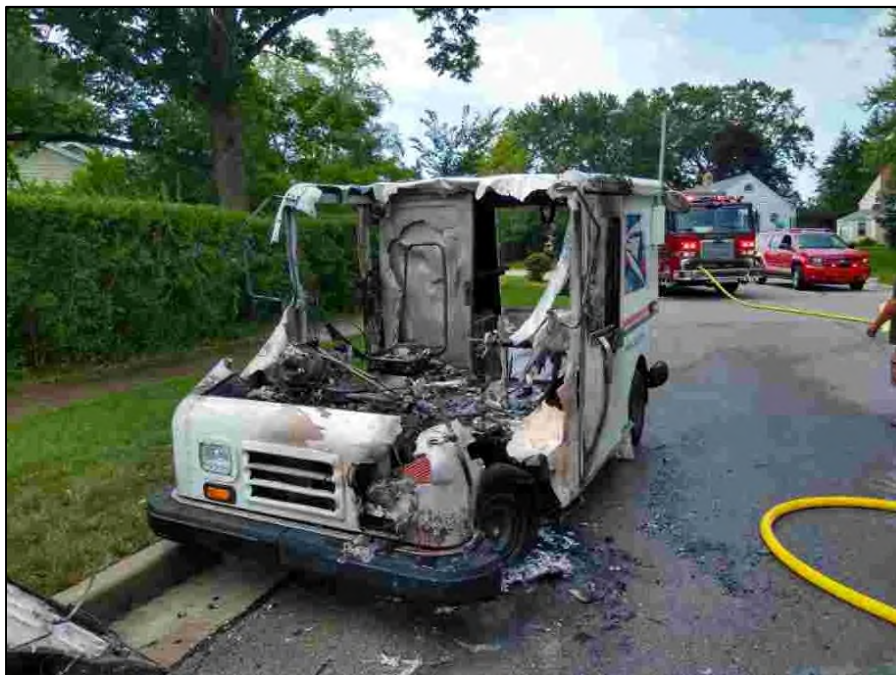
Photograph 5

The fuel lines on the left side of the engine compartment.



Photograph 6

Photo from the fire scene.



September 20, 2018
RCG File No. 52300106

Curricula Vitae



DAVID A. MAGER, CFI FIRE CONSULTANT

Mr. Mager is an International Association of Arson Investigators Certified Fire Investigator, Illinois State Fire Marshall Office Certified Fire Investigator, Certified Fire Officer II, Hazardous Materials Technician "B" and a Illinois Department of Public Health Certified Paramedic.

Mr. Mager has an extensive professional background in the areas of firefighting and fire investigations, and has investigated over five hundred fires. His professional experience includes fire and explosion investigations, fire protection and detection system inspections as well as hazardous materials mitigations.

As an International Association of Arson Investigators Certified Instructor and a Certified Instructor II through the Illinois State Fire Marshall Office, Mr. Mager has conducted numerous live fire training exercises for Fire Fighters and Fire Investigators using authentic room furnishings as well as classes on fire behavior and evidence preservation.

Mr. Mager is a Retired Deputy Fire Chief and had been the Training Officer with the Midlothian, IL. Fire Department. He was an Assistant Team Leader for the Southwest Hazardous Materials Response Team and routinely responded to fire and hazardous materials incidents, fire investigations and conducted life safety inspections within the municipality.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator - Illinois State Fire Marshall Office
Certified Fire Investigator - International Association of Arson Investigators
Certified Instructor – International Association of Arson Investigators
Certified Fire Officer II – Illinois State Fire Marshall Office
Certified Hazardous Materials Technician "B" - Illinois State Fire Marshall Office
Certified Fire Department Incident Safety Officer – Illinois State Fire Marshall Office
International Association of Arson Investigators – Member
International Association of Arson Investigators (Illinois Chapter) – Member

EMPLOYMENT HISTORY

2008 – Present	Rimkus Consulting Group, Inc.
1987 – 2015	Midlothian Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
5707 South Laburnum Avenue
Richmond, Virginia 23231
757-229-2226 Telephone
(888) 286-9943 Facsimile

January 16, 2018

Re: RCG File No: 47603148
LLV Number: 0216043
VMF Location: 1001 School Street Richmond, Virginia 23232
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 0216043, which reportedly occurred at 2963 Blendwell Road in Richmond, Virginia on December 13, 2017, at 12:17 P.M. In the course of the work, we examined and documented the fire-damaged vehicle, and interviewed the carrier/operator on December 19, 2017.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 1001 School Street in Richmond, Virginia on December 19, 2017. The work to complete this assignment was performed by Fire Consultant William R. Clark, IAAI-CFI (V). A technical review of this report was completed by Fire Division Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach, as recommended in the current edition of National Fire Protection Association's NFPA-921, "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operators compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the three toggle switches positioned in the left side of the dashboard.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of an adverse electrical event within the three toggle switches which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

The only visible fire damage on the exterior was to the windshield and smoke staining above both of the doors.

Interior Inspection:

The dashboard area displayed severe fire damage; this was identified as the area of origin. The fire was contained to this area and was extinguished in the earlier stage of the fire. The fire originated at one of the three toggle switches which had been mounted on the dash. The electrical switch involved had three electrical wires which attached to the back of the switch. The wire in the middle of the switch had a loss of mass and adverse electrical activity and another displayed adverse electrical activity.

Engine Compartment Inspection:

The engine compartment was absent of fire damage, the engine consisted of a 2.5 liter fuel injected engine.

Undercarriage Inspection:

The undercarriage was not inspected due to the fire being confined to the dashboard area. The frame type was a GM.

Fuse Panel Inspection:

The fuse panel and wiring attached to the panel were not damaged by the fire.

Area of Fire Origin:

Fire pattern analysis and witness observations indicated that the fire originated in the dashboard area while the vehicle was being driven. The specific ignition sequence and cause of the fire was determined to be the direct result of the failure of one of the three toggle switches mounted on the dash.

Evidence:

No evidence was collected from the LLV.

Potential Contributing Factors:

The driver of the vehicle observed smoking coming from the heater the day before the fire, he documented his observations on the daily vehicle check list. The day of the fire, he drove the vehicle believing that it had been repaired.

Interview:

The driver of the vehicle stated that he had been operating the vehicle for about two hours, when he smelled a little smoke. About a quarter of mile later, he observed smoke coming from the dashboard, he did not see any flames. He called his supervisor and removed the mail. He then observed fire under the dashboard; a neighbor put the fire out with a fire extinguisher. The heater was operating at the time of the fire, he had written the heater up the day before, because it was smoking. He thought the vehicle had been repaired.

Service Records:

After a review of the service records, it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance, age, and degradation may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William R. Clark

William R. Clark, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

January 16, 2018
RCG File No. 47603148

Photograph 1

View of the front of the vehicle.



Photograph 2

View of the right side of the vehicle.



January 16, 2018
RCG File No. 47603148

Photograph 3

View of the back of the vehicle.



Photograph 4

View of the left side of the vehicle.



January 16, 2018
RCG File No. 47603148

Photograph 5

View of the engine compartment.



Photograph 6

View of the dash from the right door.



January 16, 2018
RCG File No. 47603148

Photograph 7

View of the dash – area of origin.



January 16, 2018
RCG File No. 47603148

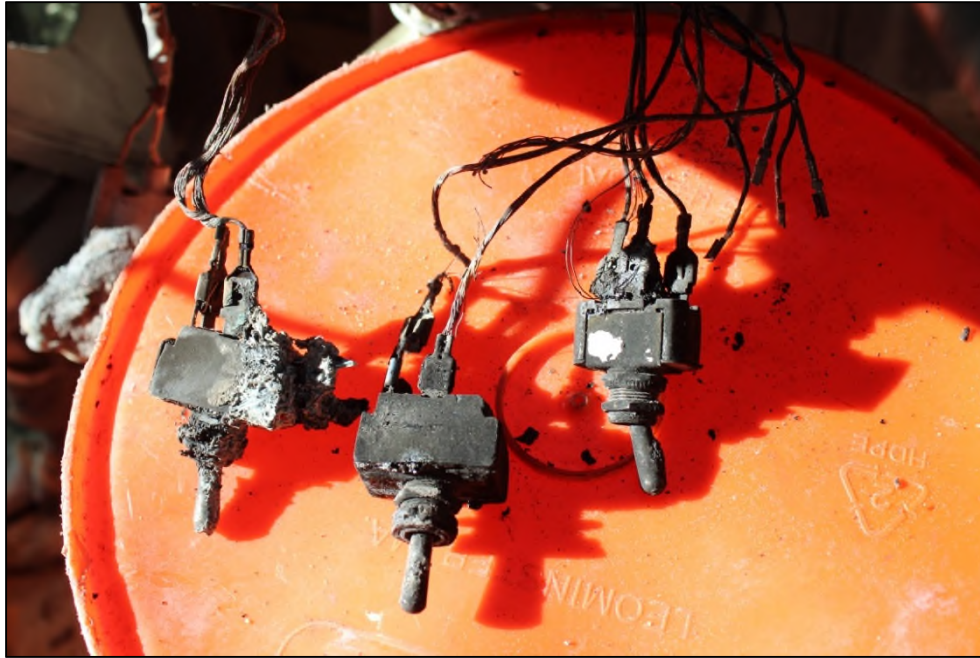
Photograph 8

View of the dash area.



Photograph 9

View of the three toggle switches – the switch in the middle responsible for the fire.



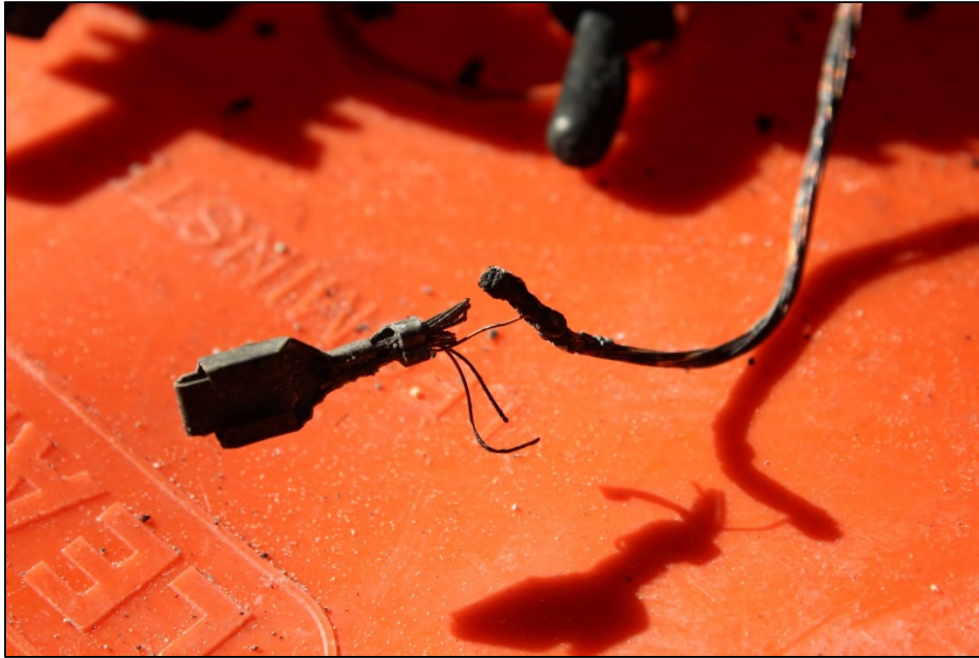
Photograph 10

Close-up view of the switch responsible for the fire.



Photograph 11

View of the damage to one of the wires belonging to the switch responsible for the fire.



Photograph 12

View of the connector with a loss of mass to the wiring.



Photograph 13

View of the opposite end of the wire where the loss of mass occurred.



Photograph 14

View of wiring (color tape) where the switches were attached.



January 16, 2018
RCG File No. 47603148

CVs



**William “Bill” Clark, IAAI-CFI, CFEI, CVFI
Fire Consultant**

Mr. Clark is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (VACFI) with the Virginia Department of Fire Programs. Mr. Clark is a Registered Private Investigator with the Virginia Department of Criminal Justice Services.

Mr. Clark has conducted over 900 fire/explosions investigations as a law enforcement officer and private fire investigator. These fire/explosion investigations have involved commercial & residential structures, as well as heavy equipment and vehicles. Mr. Clark has extensive experience investigating fires involving injury and death. Mr. Clark has also conducted investigations involving hazardous materials. Mr. Clark has instructed firefighters, police, and military in fire investigation procedures, death investigations, evidence collection, homemade explosives, and post blast investigations, weapons of mass destruction & clandestine lab recognition and safety.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Tidewater Community College, Virginia Beach, VA
Associates in Fire Science, 12 Credit Hours

Virginia Department of Fire Programs
Firefighter 1, 2, & 3, 1987

Virginia Department of Criminal Justice Academy, Petersburg, VA
Police Academy, 1989

National Fire Academy, Emmetsburg, MD
Fire/Arson Investigation Course, 1996

Virginia Department of Forensic Sciences, Lynchburg, VA
Death Investigation, 2000

Greater Cincinnati Regional Arson and Fire Investigation Association
Fire Investigation, 2003

North Carolina/South Carolina International Association of Arson Investigators Fire Investigation Seminar, 2015

Virginia State Police, Richmond, VA
Vehicle Theft Investigation, 2003

Virginia Chapter of the International Association of Arson Investigators
Electrical Fire Investigation, 2000
Fire Investigation, 2001
Small Appliance Fire Investigation 2001
Fire Investigation, 2003
Fatal Fire Investigation, 2004
Fire Investigation, 2008
Meeting the 1033/921 Challenge, 2013

William “Bill” Clark, IAAI-CFI, CFEI, CVFI

Bureau of Alcohol, Tobacco, Firearms, & Explosives, Richmond, VA
Post Blast Investigation, 2004

Virginia Department of Fire Programs, Norfolk, VA
Environmental Crimes Investigations, 2005
Arson Scene Evidence Processing, 2009

Central Shenandoah Criminal Justice Training Academy, Weyers Cave, VA
Crime Scene Investigations Course, 2005

Central Virginia Criminal Justice Academy, Lynchburg, VA
Reid Interviewing Techniques, 2006
Reid Interview Advanced Techniques, 2007

Public Agency Training Council
Vehicle Fire Investigation Course, 2006
Arson Evidence Collection Course, 2007
Arson for Profit Course, 2009

Federal Emergency Management Agency, Anniston, AL
Hazardous Materials Technician, 2008

Zero Point, Virginia Beach, VA
Advanced Homemade Explosives, 2012

Safety Unlimited
HAZWOPER Training & Certification, 2014

Member of: National Association of Fire Investigators
 International Association of Bomb Technicians & Investigators
 International Association of Arson Investigators
 Virginia Chapter – International Association of Arson Investigators

EMPLOYMENT HISTORY

2014 to Present	Rimkus Consulting Group, Inc.
2006 to 2014	Fire Technology Consultants, LLC (Part Time)
2009 to 2012	Joint Improvised Explosive Device Defeat Organization (MPRI Contractor)
2004 to 2009	Albemarle County Fire Marshal's Office
2003	Donan Engineering Company
2001 to 2006	Danielson Investigative Services (Part Time)
2001 to 2006	Fire Analysis Consulting Group (Part Time)
1998 to 2003	Amherst County Sheriff's Office
1989 to 1998	City of Franklin Police Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
7851 Woodland Center Boulevard
Tampa, FL 33614
(800) 498-3060 Telephone
(813) 289-5440 Facsimile
Certificate of Authorization No. 8301

October 5, 2017

Re: RCG File No:
LLV Number:

41118268
0216425
VMF Location: 100 South Belcher Road in Clearwater, Florida
Subject: Preliminary/Final Report

Dear Ms. b

Rimkus Consulting Group, Inc. was retained to examine 1991 GM LLV 0216425 with a Vehicle Identification Number (VIN) 1GBCS10A3M2915929. The vehicle was examined at the USPS Clearwater Vehicle Maintenance Facility located at 100 South Belcher Road in Clearwater, Florida. The fire incident reportedly occurred at 300 South Duncan Avenue in Clearwater, Florida on September 13, 2017.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined maintenance records and documented the fire damaged vehicle with photographs on September 19, 2017. Our work to complete this assignment was performed by Fire Consultant William T. Schorn, IAAI-CFI (V). This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator compartment of the involved LLV.

2. The specific area of fire origin was determined to be at the headlamp switch positioned in the left side of the dashboard.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

Examination of the vehicle began at the rear of the vehicle and continued in a clockwise direction. For the purposes of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side of the vehicle.

We observed movement and intensity fire patterns on the front of the vehicle indicating the fire originated in the operator compartment. The windshield glass failed due to thermal heating and was located within the operator compartment. The right door had been replaced prior to the time of the inspection. The door was located and examined. The glass to the driver's door was missing and smoke and soot damage was observed to the upper portion of the door frame. Directional burn patterns below the front windshield and roof indicated the fire had originated within the operator compartment. Smoke and soot damage was observed to the left side which indicated the window was partially open at the time of the fire.

The rear cargo area and all four vehicle tires were intact. The vehicle identification plate was located along the left side of the vehicle frame. There was no indication the vehicle had been involved in a collision.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred in and around the dashboard area along the driver's side of the vehicle. The majority of the combustible material and around the dashboard area had been consumed during the fire progression. During the fire development, the fire vented through the front windshield and right door window. The interior of the operator compartment sustained moderate damage and was starting to deflect downward at the time of fire extinguishment. The remains of the headlight switch assembly was recovered from the dashboard area and examined.

Engine Compartment Inspection:

The vehicle was equipped with a GM four-cylinder 2.5L gasoline engine. Smoke and soot damage was observed to the interior of the engine hood and the bulkhead located

between the operator and engine compartments sustained heat damage, but no visible fire damage. The engine components and fuel system were examined and found to be intact and didn't sustain any visible fire damage. The engine compartment was eliminated as the origin of the fire.

Undercarriage Inspection:

Examination of the undercarriage revealed no damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it has sustained moderate fire damage as a result of fire progression from the dashboard. The fire damage observed was a result of the fuse panel being exposed to the fire.

Area of Fire Origin:

It was determined that the area of fire origin was in the driver compartment on the left side of the steering column at the headlight dimmer switch.

Contributing Factors:

Potential contributing factors to the cause of the fire was normal wear and degradation of components.

Evidence Collected:

No evidence was collected.

Interview:

On October 3, 2017, we were able to communicate with the carrier, Mr. . He said he was a substitute driver and said LLV 0216425 was assigned to the route. He said he had operated the LLV approximately 30 times and was familiar with the vehicle operation. He said on the day of the fire, he had left the facility between 9:00 A.M. and 9:30 A.M. He started the route and said he didn't experience any vehicle problems. He said he delivered mail to the 300 South Duncan Avenue address in Clearwater and was gone from the vehicle for approximately 10 to 15 minutes.

When he approached the entrance of the building after delivering the mail, he observed smoke coming from the LLV and also observed two individuals attempting to extinguish the fire with fire extinguishers. As he approached the LLV, one of the individuals said

the vehicle was going to blow and to stay back. He said the smoke was originating from the interior of the vehicle. He said he never got closer than fifty feet to the vehicle.

He said he might have left the flashers on, but did not leave the engine on, nor did he turn on the headlights. He said he didn't know how the fire started, nor did he notice anything defective on the vehicle.

He said he initially called his supervisor who told him to call 911.

Service Records:

A review of the provided service records for the involved LLV for the past 12 months was conducted. After reviewing the records, electrical issues with the horn and flashers were observed, but no repairs on the headlight assembly. The last repair to the vehicle was on August 30, 2017, in which both right side tires were replaced.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Schorn

William T. Schorn, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

October 5, 2017
RCG File No. 41118268

Photograph 1

A view of the front and left side of the LLV.



Photograph 2

A view of the rear and left side of the LLV.



October 5, 2017
RCG File No. 41118268

Photograph 3

A view of the operator compartment of the LLV.



Photograph 4

A view of the engine compartment of the LLV.



Photograph 5

A view of the fire damaged fuse panel.



Photograph 6

A view of the rheostat headlight switch.



October 5, 2017
RCG File No. 41118268

Photograph 7

A side view of the rheostat headlight switch.



October 5, 2017
RCG File No. 41118268

CVs



WILLIAM SCHORN, I.A.A.I., C.F.I., C.F.E.I., C.V.F.I. FIRE CONSULTANT

Mr. Schorn attended the University of South Florida majoring in Criminal Justice. Mr. Schorn's professional career includes over 30 years with the St. Petersburg Police Department. During his tenure with the police department, he was a Patrolman, Field Training Officer, Surveillance Detective, and Auto Theft Detective. For his last 19 years, he was assigned to the fire department to conduct fire investigations. In addition to the latent investigation, he also conducted the origin and cause investigations. Mr. Schorn was also the lead fire investigator for the City of St. Petersburg from 2006 until his retirement.

Mr. Schorn is a Certified Fire Investigator with the International Association of Arson Investigators, as well as a Certified Fire and Explosive Investigator and Certified Vehicle Fire Investigator with the National Association of Fire Investigators. He has been rendered an expert regarding fire investigations in criminal court. As the arson investigator assigned to the fire department, he assisted conducting the fire origin and cause investigation, as well as the criminal investigations. During the 19 years he was assigned to the fire department, he conducted approximately 1936 fire investigations. Since 2005, he has conducted approximately 493 origin and cause investigations, in which approximately 168 cases have been determined to be incendiary. Mr. Schorn also holds a private investigator license in the state of Florida (PI License number C1400618).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Law Enforcement Certification - Saint Petersburg Junior College (1984)
Criminal Justice – St. Pete College/University of South Florida (1980 -1984)
Professional Arson Co-Op of Florida
Florida Advisory Committee on Fire Prevention (FACAP)
International Association of Arson Investigators
International Association of Arson Investigators (FL Chapter)
National Association of Fire Investigators
Certified Fire and Explosive Investigator - National Association of Fire Investigators (2002)
Certified Fire Investigator - International Association of Arson Investigators (2009)
Certified Vehicle Fire Investigator (2013)

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1984 – 2015	Saint Petersburg Police Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
6990 Columbia Gateway Drive, Suite 110
Columbia, MD 21046
(877) 872-2999 Telephone
(410) 872-9111 Facsimile

August 29, 2016

Re: RCG File No: 47508330
LLV Number: 0216601
VMF Location: 8201a Harford Road in Parkville, Maryland
Subject: Final Report

Rimkus Consulting Group, Inc. was requested to examine the vehicle fire loss involving USPS LLV 0216601, VIN 1GBCS10A5M2916127 that reportedly occurred after the vehicle stopped operating at 125 Blue Ball Road in Elkton, Maryland on July 9, 2016. In the course of our work, we examined and documented the fire-damaged vehicle and interviewed the carrier/operator on July 18, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 8201a Harford Road in Parkville, Maryland. The work to complete this assignment was performed by Fire Consultant, Mr. Charles W. Feeley, IAAI-CFI. We obtained and reviewed the VinLink Record, maintenance and repair orders, and recalls and defects. This report and case was reviewed by Mr. Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at and around the rubber fuel lines routed on the left (mail) side of the LLV.

3. The specific ignition sequence and cause of the fire was determined to be a fuel leak at the rubber fuel lines which allowed atomized gasoline to be ignited on the hot surface of the operating exhaust manifold.

Observations

Exterior Inspection:

The front of the vehicle sustained fire and heat damage to the A and B posts, hood, windshield, and roof. The hood had been removed prior to our inspection. The left side sustained fire and heat damage from the front bumper to the rear bumper. The side panel of the driver area and cargo area had been removed prior to our inspection. The rear sustained fire and heat damage to the overhead door which had been removed prior to our inspection. The right side sustained fire and heat damage from the front bumper to the rear bumper. The driver's door and side panel at the cargo area had collapsed into the interior. The rear tires sustained heat damage. The front tires sustained fire damage to the top and inside surfaces. The roof sustained fire damage. The center had been consumed and the left side had been removed prior to our inspection.

Interior Inspection:

The passenger compartment sustained fire and heat damage throughout. The combustible materials of the seat had been consumed. The dashboard had been consumed by the fire. The insulation of the wiring harness in the dashboard had been consumed. The Engine Control Module positioned within the center of the dashboard had been consumed. The front bulkhead had been consumed. The aluminum floor had melted, exposing the frame and transmission. The bulkhead between the passenger compartment and the cargo area had sustained fire damage and had been removed and placed in the cargo area prior to our inspection. The rear cargo area sustained fire and heat damage throughout. The contents of the cargo area had sustained fire and heat damage to the top layer.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the engine compartment. The engine compartment sustained fire, heat, and smoke damage throughout. The damage was most severe on the left side of the engine compartment. The fuse block located in the engine compartment was too severely damaged to evaluate. The brake booster sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been consumed. The fixed fuel lines were intact and attached to the fuel rail on the right side of the engine. The flexible fuel lines positioned on the

left side of the engine had been consumed. The insulation of the wiring harness in the right rear of the engine compartment had been consumed. The insulation of the conductors in the wiring harness on the left side of the engine compartment had been consumed. No evidence of adverse electrical activity was observed on the conductors of the wiring harnesses. The battery was inspected and the exterior case had been consumed. The plates had fallen to the ground. The negative battery terminal had become detached. The negative conductor was attached to the frame. The positive terminal had become detached and the conductor to the starter was attached. The alternator sustained fire damage to the top and rear surfaces and the electrical conductors had been severed. The alternator had fallen to the ground. The starter sustained heat damage, but the electrical connections were secure. A hole had been melted into the left side of the transmission housing directly in line with the consumed flexible fuel lines.

Undercarriage Inspection:

Examination of the rear undercarriage revealed no evidence of soot, smoke, heat or fire damage. The undercarriage in the area of the engine sustained fire and heat damage. The involved LLV was mounted on a GM frame. The fuel lines were positioned above the open frame to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. They were routed under the rear of the engine to the right side of the engine. The transmission sustained fire damage from within the engine compartment.

Fuse Panel Inspection:

The fuse panel in the engine compartment was too severely damaged to evaluate.

Area of Fire Origin:

The area of fire origin was determined to be on the left side of the engine compartment. The specific area of origin within the engine compartment was determined to be at the position of the flexible fuel lines.

Contributing Factors:

A fuel leak from the flexible fuel line onto the hot exhaust manifold was the most probable ignition sequence.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interview:

The carrier and vehicle driver was interviewed on July 18, 2016 and provided the following information:

- She arrived at work at approximately 7:30 A.M.
- She began her route at approximately 11:30 A.M.
- She does not drive this vehicle on a daily basis.
- When she started the vehicle it began to sputter.
- She turned it off and restarted the vehicle.
- It was fine the second time.
- She did not hear or see anything unusual during the course of the day.
- She had driven approximately fifteen miles on her route.
- It was approximately 1:30 P.M. when the vehicle stalled while making a U-turn on Routed 40.
- She called the office and reported the problem.
- She attempted to return to the shop but the vehicle kept stalling.
- She heard a loud pop and began to pull over to the roadside.
- A passerby told her fire was coming out behind her vehicle.
- She stopped and got out.
- She saw fire coming from beneath the engine compartment at the front in the center.
- She called 911.

Service Records:

A review of the service records for the involved LLV indicated that maintenance work was conducted by a third party vendor. However, there were no repairs noted that would have caused or contributed to the cause of the fire. The third party vendor could have missed or not checked damaged or degraded rubber fuel lines during maintenance.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles W. Feeley

Charles W. Feeley, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

Photograph 1

A view of the front of the involved vehicle.



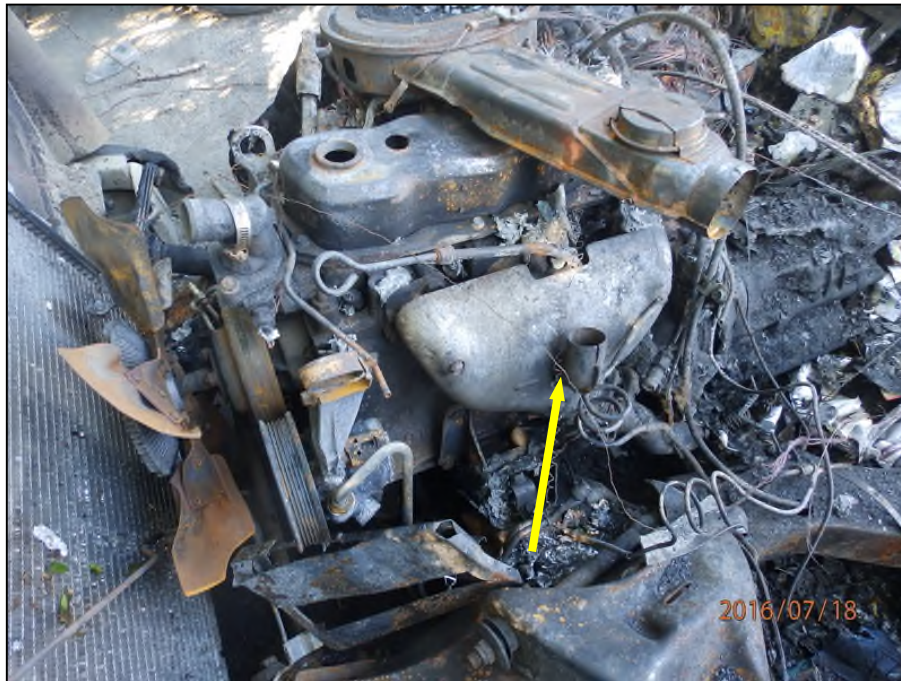
Photograph 2

A view of the passenger compartment floor above the transmission.



Photograph 3

A view of the left side of the engine compartment at the exhaust manifold.



Photograph 4

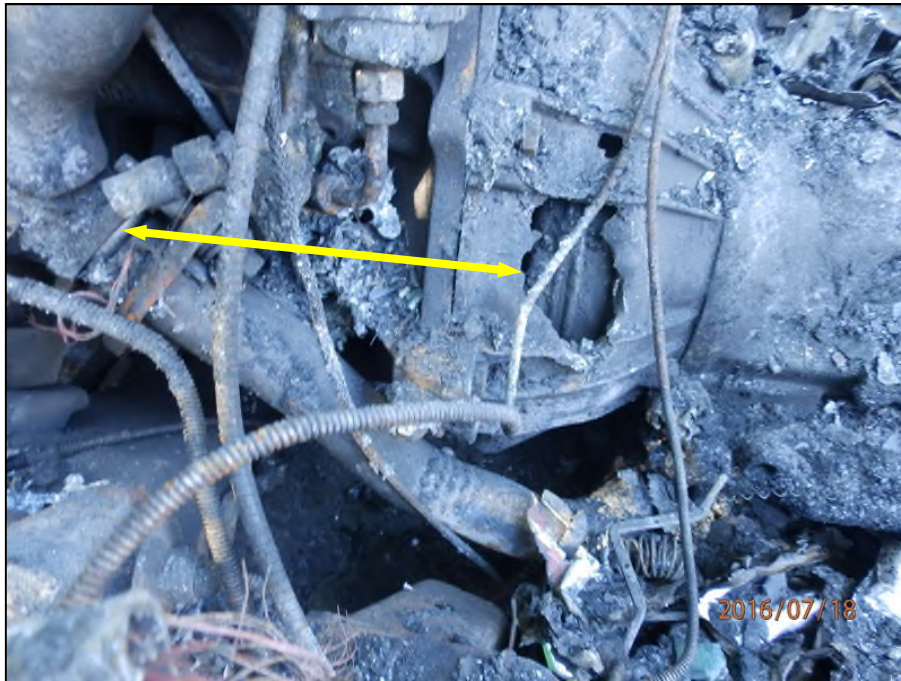
A view of the position of the consumed flexible fuel lines.



August 29, 2016
RCG File No. 47508330

Photograph 5

A view of the fixed fuel lines in the area of the transmission.



August 29, 2016
RCG File No. 47508330

CVs



**CHARLES FEELEY, I.A.A.I., C.F.E.I., C.F.I., P. I.
FIRE CONSULTANT**

Mr. Feeley had been employed by the Baltimore City Fire Department for 35 years. In this capacity he had been involved in many different emergency positions including Fire Fighter, Lieutenant, Captain, Chief Safety Officer, Battalion Commander and Division Chief.

Mr. Feeley has completed numerous educational seminars and continuing educational courses.

Mr. Feeley investigated over 550 fires in four years as an investigator and in excess of 5,000 fires as an incident commander at fire scenes. He has given expert testimony in civil and criminal court cases. He supervised the Office of the Fire Marshal in Baltimore City. He also supervised special projects such as the Arson Task Force, juvenile fire setters program, an educational intervention program and public education programs.

At Rimkus Consulting Group, Mr. Feeley has conducted over 500 fire origin and cause determinations that include, but are not limited to, assignments involving residential, commercial, industrial, passenger and commercial vehicles, marine, farm implement/equipment, appliance and electrical equipment related fires.

Mr. Feeley has been recognized for his achievements by being the recipient of awards that include Distinguished Unit Citation, Meritorious Conduct Award, Exemplary Performance, and Distinguished Service Award.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

National Fire Academy
National Nuclear Security Administration
United States Department of Justice, New Mexico Tech.
Department of Homeland Security
National Association of Fire Arson Investigators
United States Department of Justice, Anniston AL.
National Association of Fire Investigators.
Certified Fire and Explosion Investigator, N.A.F.I Certification
Certified Fire Investigator, International Association of Arson Investigators
Licensed as a Private Investigator in the State of Delaware

EMPLOYMENT HISTORY

2006 – Present	Rimkus Consulting Group, Inc.
1970 – 2006	Baltimore City Fire Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
7501 South Quincy Street, Suite 160
Willowbrook, IL 60527
(866) 746-5871 Telephone
(630) 321-1847 Facsimile

January 26, 2016

Re: RCG File No: 50903368
USPS LLV Number: 0216857
Exam Location: 345 West St. Paul Avenue in Milwaukee, Wisconsin
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 0216857, VIN 1GBCS10A9M2916261 that occurred at 840 Main Street in Belgium, Wisconsin on November 5, 2015. In the course of our work, we examined and documented the fire-damaged vehicle on November 19, 2015. Our work to complete this assignment was performed by Patrick M. Dunn, CFI. The case is being reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility. The carrier was interviewed by phone on December 10, 2015.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at a metal P strap/clamp that was mounted on the engine block with the positive battery cable that was routed and held.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of the positive battery cable being in contact with the metal P strap and the insulation becoming worn over time causing the positive cable to make contact with the metal strap. This caused an adverse electrical event which subsequently caused the fire damage.

Observations

Exterior Inspection:

The exterior examination of the vehicle revealed no evidence of soot, smoke, heat or fire damage. The hood was bent as a result of the fire department attempting to access the engine compartment. The right front marker light was hanging by the electrical connection.

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments revealed no evidence of soot, smoke, heat or fire damage.

Engine Compartment Inspection:

The engine compartment was visually examined. There was a powdery substance covering the surfaces of the engine compartment indicating that a dry chemical fire extinguisher was utilized in the suppression of the fire. The battery was in place on the battery tray on top of the right inner fender. There was melting to the lower side of the battery between the side post connections. The negative cable was still in place affixed to the side terminal. The insulation on the cable had melted and the cable was exposed. The positive cable was not attached to the battery and a portion of the cable had severed at the "P" strap on the side of the engine. The portion of the positive cable from the starter solenoid to the battery had arced and melted to the "P" strap. There was no additional visible fire damage. The oil level for the engine was checked and found at proper operating level. The transmission fluid was checked and found at the proper operating level.

Undercarriage Inspection:

Examination of the undercarriage revealed no evidence of smoke staining, heat or fire damage. The involved LLV had a GM frame. The fuel lines were routed inside the left frame rail. The fuel filter was a canister style mounted in the engine compartment. The fuel line and fuel filter were not involved in the fire.

Fuse Panel Inspection:

The fuse panel was examined and documented. No open fuses were observed.

Area of Fire Origin:

The area of fire origin was determined to be on the driver's side at the "P" strap hanger mounted on the side of the engine block.

Contributing Factors:

The insulating coating on the "P" strap was compromised as was the insulation on the positive cable from the battery. The plastic cover on the battery cables was not located at the area of origin. The absence of the plastic cover and failure of the cable insulation were contributing factors in the fire.

Evidence Collected:

There was no evidence collected.

Interview:

The carrier stated that she began her route in the morning and did not notice anything unusual about the performance of the vehicle at that time. When she started the vehicle, it ran and performed normally. Later in the morning she smelled something like hot or burning plastic but then the odor went away. In the afternoon, she stated about 3:00 p.m., she shut the engine off to carry a parcel to a home. When she returned to the vehicle, it would not start. She called her supervisor at the Post Office to have another vehicle brought out to her so she could finish her route. While waiting for the other vehicle, she saw something dripping down under the front end and smelled burning plastic. She saw smoke and flames and called the fire department. She then called her supervisor to inform her of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Patrick M. Dunn

Patrick M. Dunn, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

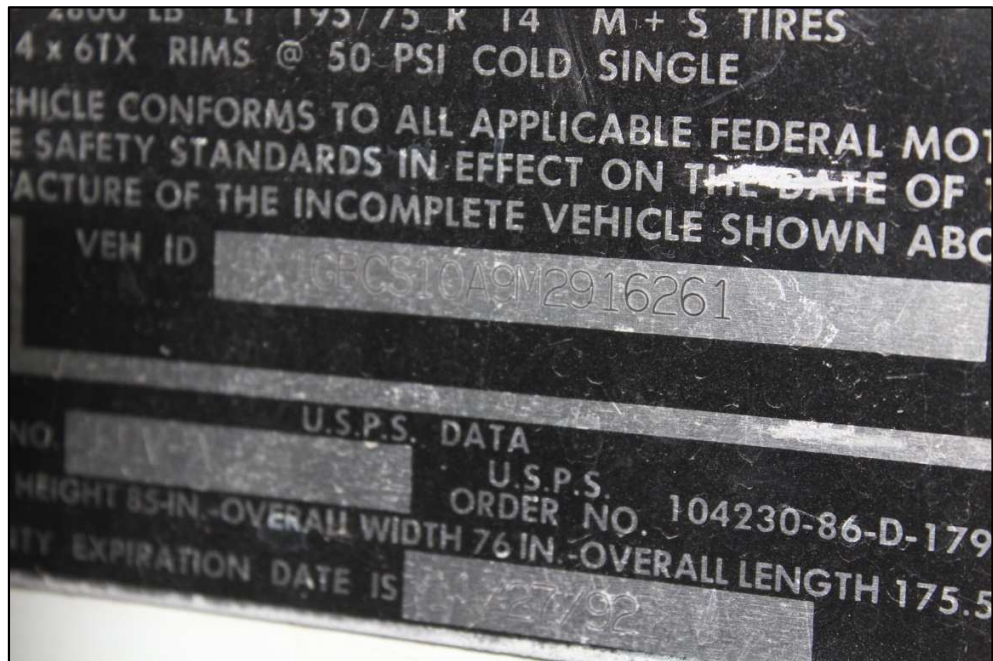
Jack R. Kennedy, III, IAAI-CFI
Technical Manager

Attachments: Photographs, CVs

January 26, 2016
RCG File No. 50903368

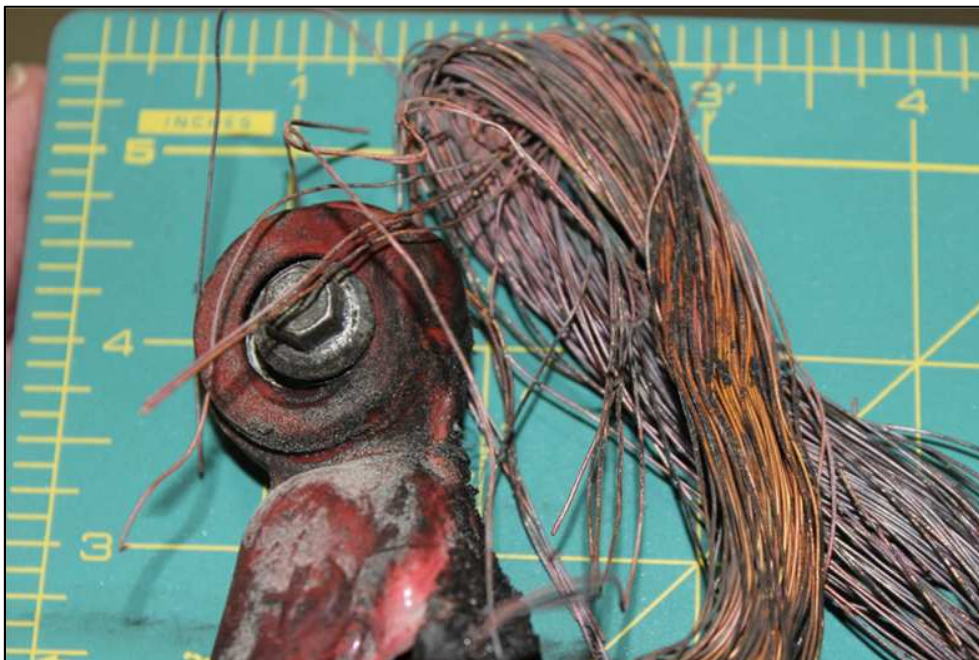
Photograph 1

Vehicle Identification Number (VIN) plate.



Photograph 2

Fire damaged severed portion of the positive battery cable.



January 26, 2016
RCG File No. 50903368

Photograph 3

Fire damaged side of the battery.



Photograph 4

"P" strap on the side of the engine block.



January 26, 2016
RCG File No. 50903368

CVs



**PATRICK M. DUNN, CFI
FIRE CONSULTANT**

Mr. Dunn has been a Fire Investigator in the Insurance Industry for 22 years, with over a thousand fire scene investigations. He is an Illinois State Certified Arson Investigator. He is a Certified Fire Investigator through the International Association of Arson Investigators. He has completed the Fire and Arson Investigation Course at the Illinois Fire Service Institute. He has also completed the Arson Investigative Techniques Training with the Bureau of Alcohol, Tobacco and Firearms.

Mr. Dunn's areas of expertise include both structural and vehicular fires. He has conducted several room size fires as training aides for firefighters, fire investigators and police investigators using authentic room furnishings. Many ignition scenarios were used on combustibles, from flammable liquid to small explosions. Similar techniques were used in the training of vehicular fires. Mr. Dunn has been qualified an expert in vehicular fires by the Court in Lake County, Illinois.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigation, International Association of Arson Investigators
Fire and Arson Investigation, Illinois Fire Service Institute, 1990 and 1995
Certified Arson Investigator- Illinois
Licensed Private Investigator – Wisconsin (Lic. #11311-63)
Licensed Private Investigator – Minnesota (Lic. #1035)
Member: International Association of Arson Investigators
International Association of Arson Investigators, Wisconsin Chapter

EMPLOYMENT HISTORY

2006 - Present	Rimkus Consulting Group, Inc.
1984 - 2006	American Family Insurance Co.
1972 - 1984	Lake County, IL Sheriff's Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, New Jersey 07631
Telephone: (201) 368-8551
Certificate of Authorization No. 24GA28127700
Certification Expiration Date August 31, 2020

June 21, 2019

Re: RCG File No: 100003028
LLV Number: 0217286
VMF Location: 1195 Towbin Avenue Lakewood, New Jersey
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 0217286, VIN 1GBCS10A4M2916815. The vehicle was examined at the VMF located at 1195 Towbin Avenue, in Lakewood, New Jersey. The fire incident reportedly occurred on Route 18 in Wall Township, New Jersey.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on May 22, 2019. Our work to complete this assignment was performed by Western Region Fire Manager Jonathan Sivils, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the operator's compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the rheostat headlamp switch positioned in the left side of the dashboard.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Fire damage was noted along the top of the hood nearest the bulkhead. All remaining sides of the vehicle revealed no fire damage.

Interior Inspection:

Examination of the interior of the vehicle revealed the only fire damage had occurred to the top right side of the dashboard area behind the headlamp switch. Examination of the headlamp switch components revealed the switch was melted. The electrical conductors at the switch revealed they were intact and undamaged. Upon further examination of the conductors that transversed the dashboard from the headlamp switch to the fuse panel revealed abnormal electrical activity and fractures.

Engine Compartment Inspection:

The engine compartment was examined. Fire damage was noted along the top side nearest the bulkhead on the right side. The fuel system was examined and found to be intact with no damage noted. The fuel filter was intact and located along the rear of the engine near the bulkhead. The vehicle was equipped with a four-cylinder 2.5L and a standard ignition coil. The fuel system was the GM model. The battery for the vehicle is located at the front right side of the engine compartment and had no fire damage. Based on the fire patterns, fire transferred into the engine compartment through the manufactured openings in the bulkhead on the right side. The engine compartment is not the area of origin.

Undercarriage Inspection:

Examination of the undercarriage revealed no damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks

Fuse Panel Inspection:

Examination of the fuse panel revealed the 20 amp fuse for the headlamps was blown. No other fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the top right side of the dashboard area of the vehicle. The specific area of origin is inside the dashboard behind the instrument cluster involving the conductors for the headlamp switch.

Potential Contributing Factors:

Issues with the power supply to the headlamp switch or the conductors rubbing on a sharp object inside the dashboard could not be eliminated. The involved components were collected and sent to the Charlotte, North Carolina office for possible analysis.

Evidence Collected:

- 1- Headlamps switch assembly and associated wiring.
- 2- 20 Amp fuse.

Interviews:

On May 22, 2019, an interview via telephone was conducted with the carrier/driver of the vehicle at the time of the fire. Mr. reported the following information:

- He was driving the vehicle on Route 18 in Wall Township when the vehicle started temperature gauge indicated it was overheating.
- He pulled the vehicle off the road and called for someone to pick him up and to get a tow truck started out to him. While waiting for the tow truck, the vehicle began to smoke followed by flames inside the dashboard and then from the engine compartment on the right side.

Service Records

A review of the service records revealed no recent repairs or service that would have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to

determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jonathan K. Sivils

Jonathan K. Sivils, IAAI-CFI (V)
Western Region Fire Manager

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

June 21, 2019
Rimkus File No. 100003028

Photograph 1

Front of LLV 0217286.



Photograph 2

Right front side.



Photograph 3
Left rear side.



Photograph 4
Fire damage to hood along bulkhead.



Photograph 5

Fire damage inside engine compartment along bulkhead.



Photograph 6

View inside air cleaner.



Photograph 7

View of driver's area. Fire damage to dashboard.



Photograph 8

Fire damage to dashboard.



Photograph 9

Closer view of fire damage.

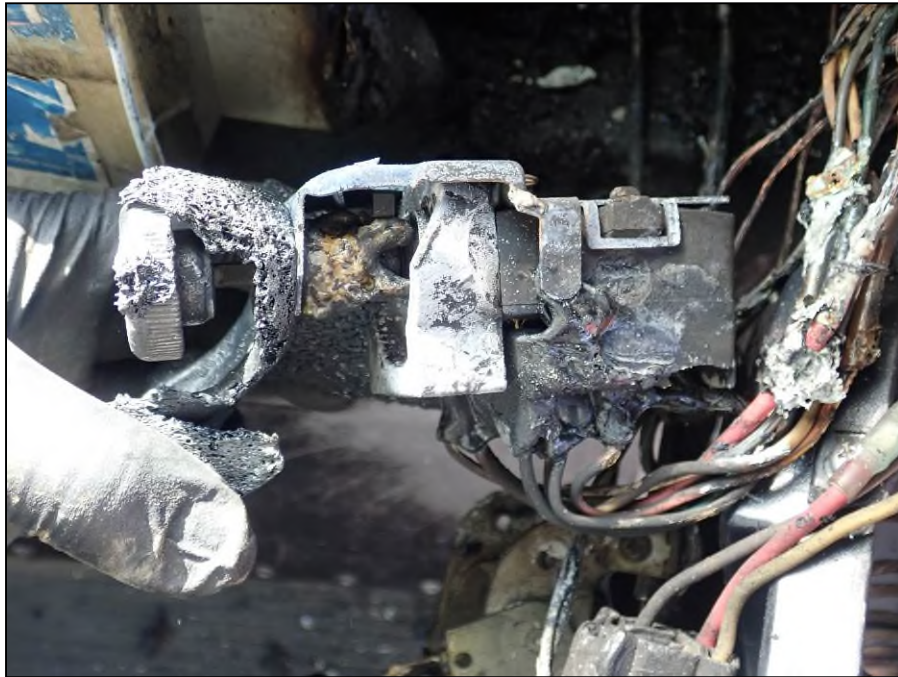


Photograph 10

Headlamp assembly switch.



Photograph 11
Headlamp switch removed.



Photograph 12
Abnormal electrical activity of conductors for headlamp assembly.



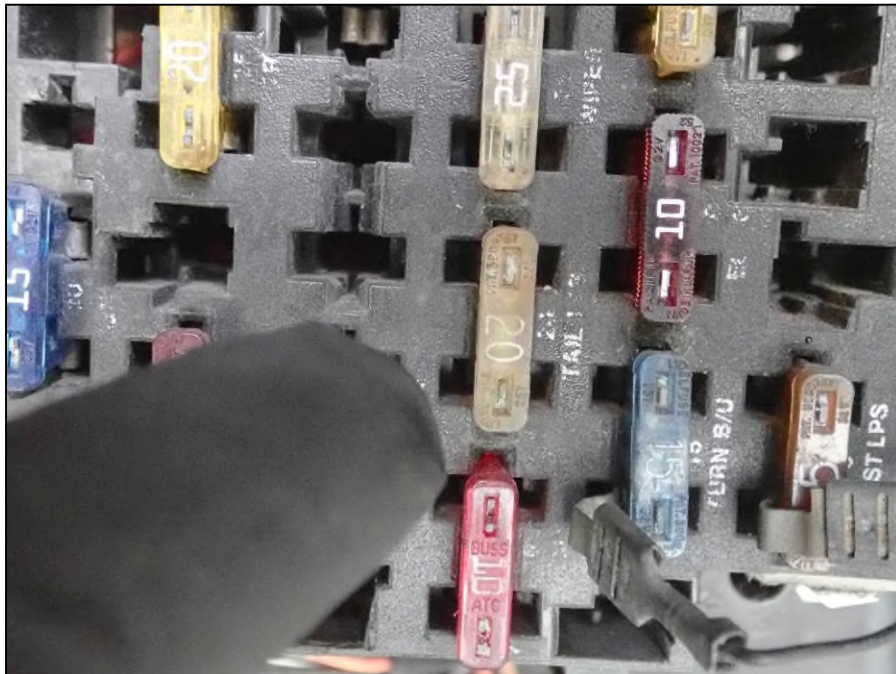
Photograph 13

Abnormal electrical activity of conductors for headlamp assembly.



Photograph 14

20 AMP fuse for headlamp/ Tail Lamp.



Photograph 15

Fuse removed and blown.



June 21, 2019
Rimkus File No. 100003028

Curriculum Vitae



Jonathan K. Sivils, CFI, CFEI, FIT

Fire Consultant
Fire Division

Background

A graduate of Americus University with an A.A.S. degree in Fire Protection Technology, Mr. Sivils is a Certified Fire Investigator (CFI-V) with the International Association of Arson Investigators (IAAI) as well as a Certified Fire and Explosion Investigator (CFEI) and a Fire Investigation Technician (FIT) with the National Association of Fire Investigators (NAFI).

In a career spanning more than 25 years in the fire service, Mr. Sivils has investigated and determined the origin and cause of more than 3,000 fires involving commercial and residential structures, vehicles, marine vessels, and heavy equipment. His representative forensic engagements primarily consist of single- and multi-family residential fires; large-loss fires and explosions in commercial and residential structures; multi-unit residential fires; passenger vehicle fires; heavy equipment fires (including trucks, buses, heavy construction machinery, and agricultural equipment); and marine equipment and boats. He is also responsible for the determination of code compliance in various situations as well as investigating arson fires and collecting fire evidence.

Mr. Sivils has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation and evidence collection. He has had extensive training in fire and criminal investigations and is a court-qualified expert witness in both criminal and civil proceedings.

He has also been a member of several professional organizations, including: IAAI; NAFI; National Fire Protection Association; Bucks County Fire Chiefs and Firefighters Association; Bucks County Fire Marshal Association; and Pennsylvania Association of Arson Investigators.

Contact Information

(610) 941-5599

jsivils@rimkus.com

3620 Horizon Drive,
Suite 200
King of Prussia, PA 19406

Professional Engagements

- Fire/Arson/Explosion Investigations



Rimkus Consulting Group, Inc.
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, New Jersey 07631
(201) 368-8551 Telephone
(201) 368-8557 Facsimile

Certificate of Authorization No. 24GA28127700

June 8, 2018

Re: RCG File No: 47810476
LLV Number: 0218244
VMF Location: 50 Brewery Street New Haven, Connecticut
Subject: Preliminary/Final Report

Dear

On March 25, 2018, a fire occurred in a US Postal Service vehicle in Groton, Connecticut. Rimkus Consulting Group, Inc. was retained to examine the Grumman LLV 0218244. On May 2, 2018, we conducted a fire origin and cause examination on the vehicle at the New Haven VMF located at 50 Brewery Street in New Haven, Connecticut.

In the course of our work, we interviewed the mail carrier, examined the vehicle and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Scott Popovich, IAAI-CFI (V). This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the mail side of the engine towards the rear and down at the bottom of the engine.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of ignition of either leaking or atomized gasoline fuel coming in contact with the hot surface area of the components in the area of the exhaust manifold.

Observations

Exterior Inspection:

The examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left refers to the mail side. We observed movement and intensity fire patterns on the front of the vehicle indicating a fire originating in the engine compartment. The windshield was broken due to thermal conditions. The mail side fender and firewall was partially consumed by fire. The side triangle window was cracked due to thermal damage on the driver's side and totally consumed on the mail side. The mail side mirror was fire damaged. The rear overhead cargo door had no fire patterns on the top indicating it was in the closed position when the fire occurred. Some smoke staining was present at the vents on the side of the vehicle at the rear. The front mail side tire was fire damaged and deflated all the other tires were intact and inflated.

Interior Inspection:

The passenger compartment had fire damage to the dashboard and fire wall area on the mail side. The driver's seat had thermal damage to the seat covering. The debris on the floor of the driver's area was delayered and we did not observe any items of evidentiary value. The cargo compartment was smoke and soot stained. Fire damage on the interior was determined to be caused by fire extension from the engine compartment through the manufactured openings in the fire wall and consumption of the aluminum.

Engine Compartment Inspection:

The most severe fire damage was to the mail side of the engine compartment. The driver's side had the least amount of damage. The battery had sustained damage to the top side and the wires were cut prior to our arrival. No evidence of corrosion on the cables was observed. The hoses, belts, and wiring on the driver's side did not have significant fire damage. The hoses, belts and wires on the mail side had severe fire damage. The radiator showed damage on the mail side.

Undercarriage Inspection:

The vehicle was placed on a mechanical inspection lift and the undercarriage was examined. The vehicle was mounted on a GM frame and we did not observe any fire damage or anomalies to the undercarriage of the LLV. The fuel lines running along the chassis were examined and we did not observe any damage from the rear of the vehicle to the engine compartment. The LLV was equipped with a GM fuel filter system.

Fuse Panel Inspection:

The fuse panel was inspected. The protective cover was melted off. The fuses were soot and smoke stained. One twenty amp fuse and one ten amp fuse were found to be operated and open.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated at the exhaust manifold in the vicinity of the rubber fuel line that descended from the fuel filter on the lower left side of the engine. The rubber hose was compromised due to radiant heat and caused pressurized atomized fuel to leak and become ignited on the hot surface of the exhaust manifold.

Potential Contributing Factors:

One of the potential contributing factors was most probably due to physical damage to the rubber fuel supply line that was in close proximity to the exhaust manifold.

Evidence Collected:

No evidence was collected.

Interview:

A telephone interview was conducted with the driver of the vehicle, she reported the following information: She only drives this LLV on Sundays. She had not had previous issues with the vehicle. She picked it up with a half a tank of fuel. She lost power while driving on the highway. When she stopped, black smoke started to come from the hood and was followed by flames.

Service Records:

Service records were collected and are part of the file. Records indicate the last scheduled maintenance occurred on October 30, 2017. During this time the fuel filter was replaced and the spark plugs and wires were replaced along with several other

items. Service records indicate on December 7, 2017, the frame system had been replaced. Based on this information, maintenance and repairs may have been a contributing factor to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Scott S. Popovich

Scott S. Popovich, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

June 8, 2018
RCG File No. 47810476

Photograph 1
Front of LLV 0218244.

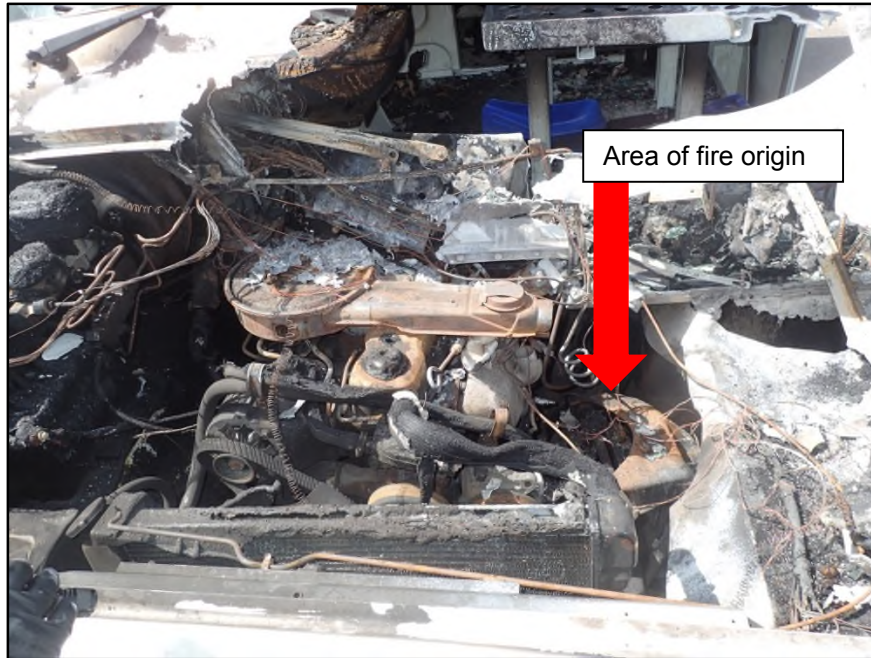


Photograph 2
Fire damage on the mail side of the vehicle.



Photograph 3

Engine compartment and area of origin.

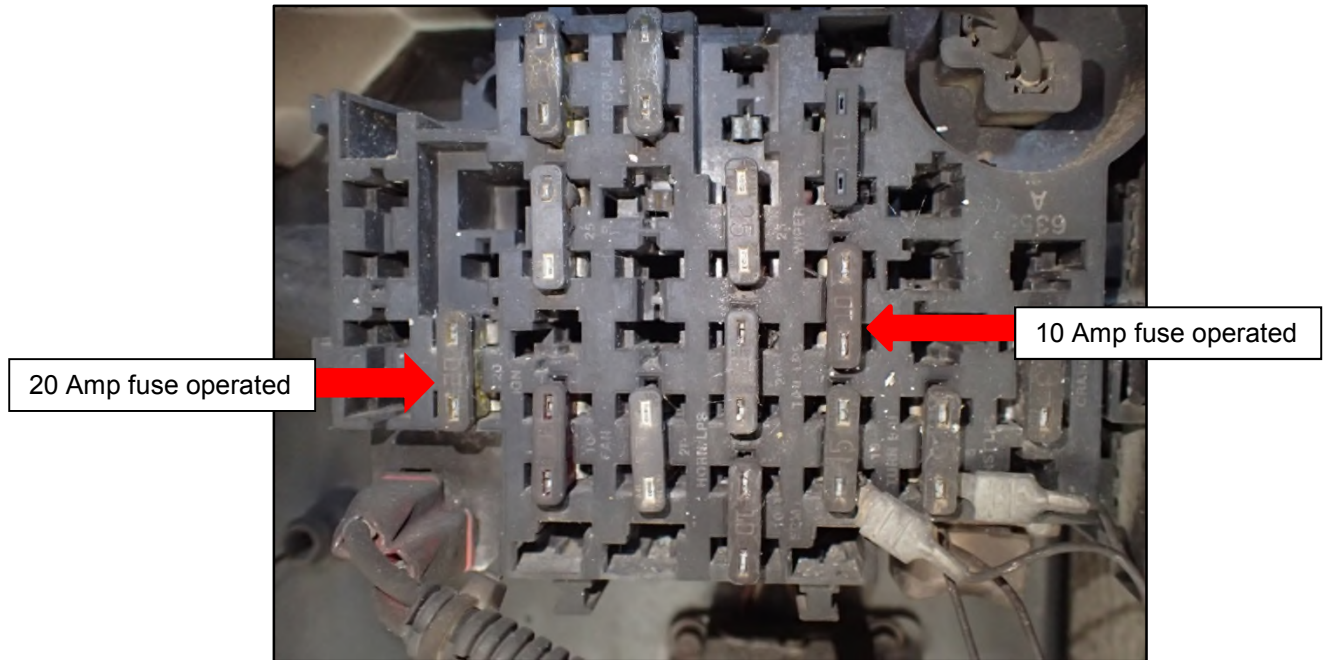


Photograph 4

Close up view of area of origin from below.



Photograph 5
View of fuse panel.



Photograph 6
Undercarriage of LLV.



June 8, 2018
RCG File No. 47810476

CVs



SCOTT S. POPOVICH, CFPS, CFEI, CVFI, FIT FIRE CONSULTANT

Mr. Popovich's professional career includes 25 years with the Woonsocket Fire Department in the city of Woonsocket, RI. In that capacity he has been involved in many different emergency services including Deputy Director of Emergency Management, Assistant Fire Marshal, Lieutenant and Firefighter. As a licensed state of Rhode Island Assistant Deputy State Fire Marshal his duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Popovich has a Master of Science in Fire and Arson Investigation from the University of New Haven with a heavy concentration in forensics and a Bachelor of Science in Public Administration from Roger Williams University. He maintains certifications as a fire investigator and fire inspector and has attended numerous classes at the National Fire Academy and the Rhode Island State Crime Laboratory.

Mr. Popovich was recently recognized for project development for the planning and execution of Emergency Response Training for CVS Corporate Headquarters in Woonsocket, Rhode Island.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

M.S. – Fire and Arson Investigation – University of New Haven, Connecticut
B.S. – Public Administration – Roger Williams University, Rhode Island
A.S. – Fire Science – Community College of Rhode Island

Licenses and Certifications

Fire Investigative Technician (FIT) by the International Association of Arson Investigators
Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) by the National Association of Fire Investigators
Certified Fire Protection Specialist (CFPS) by the National Fire Protection Association
Certified Fire Inspector (CFI) by the National Fire Protection Association
Certified Evidence Collection Technician (ECT) by the International Association of Arson Investigators
Licensed Emergency Medical Technician by the State of Rhode Island
Licensed Oil Heat Technician
Licensed Hoisting Equipment Operator by the State of Rhode Island
Licensed Private Detective in the State of Rhode Island

Professional Memberships

IAAI (International Association of Arson Investigators)
RIIAAI (Rhode Island Chapter of International Association of Arson Investigators) Board Member



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, New Jersey 07631
(201) 368-8551 Telephone
(201) 368-8557 Facsimile

Certificate of Authorization No. 24GA28127700

June 19, 2018

Re: RCG File No: 47810507
LLV Number: 1200431
VMF Location: 308 Thomas Street Newark, New Jersey
Subject: Preliminary/Final Report

Dear

On March 29, 2018, a fire involving USPS LLV vehicle 1200431 reportedly occurred while the vehicle was pulling out of the driveway at 299 East Hanover Avenue in Morrisville, New Jersey. The vehicle was manufactured by Grumman on 09/12/1991; model LLV-A91 RH with VIN 1GBCS10A1M2919042.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Newark VMF located at 308 Thomas Street in Newark, New Jersey. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on May 16, 2018. The vehicle examination was conducted by Fire Consultant Jeffrey Wilson, NAFI-CFEI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The vehicle sustained moderate to severe fire damage to the right side of the engine compartment from the fire originating within the engine compartment.

2. The area of origin was determined to have been on the driver's side of the engine compartment along the top of the 2.5 liter, L-4 engine and above the exhaust manifold in the area where the braided flexible hoses attached to the fuel supply line.
3. We were unable to conclusively determine the specific ignition sequence and cause of the fire. We could not eliminate a failure of the fuel line, causing atomized fuel to contact the exhaust manifold directly below the connection point of the fuel line. The atomized fuel ignited on the hot surface and spread to adjacent combustible materials.
4. The rear interior storage mail/compartament was not involved with this fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a counterclockwise direction. The front grill and lights of the LLV were observed to be intact with no fire damage. The hood of the engine compartment had some heat damage and became warped as a result of the fire. The windshield had a considerable amount of smoke damage and was cracked as a result of the fire. The aluminum roof of the vehicle did not sustain any physical damage. A minor amount of smoke staining was observed on the roof and on the side panels of the cargo compartment.

Fire patterns indicated that the fire originated within the engine compartment. Blistering of the paint on the hood was observed while no damage at all was observed to the exterior lights and side panels of the rear cargo area.

Interior Inspection:

The interior cargo area sustained very minor smoke damage. The fire patterns indicated the fire entered the operator's compartment through an opening in the bulkhead in the lower area in front of where the operator sits along the dashboard sustained some minor melting damage. The operator's compartment also sustained some smoke and soot damage.

Engine Compartment Inspection:

The engine compartment was observed with moderate fire damage. The driver's side contained the brakes master cylinder, battery, alternator, rubber and plastic components and the majority of the electrical conductors within the compartment. However, this side of the compartment sustained mainly minor fire damage. Most of the components were observed to be intact with very little melting. Fire patterns indicated that the moderate damage was to the front of the engine compartment and more specifically along the top of the engine block along the spark plug housings. No evidence was observed of the fire originating within the brakes, wheel hubs or tires in the area of the engine compartment.

The majority of damage to the engine compartment occurred along the mail side of the engine block towards the bulkhead. Fire patterns indicated this was the area of origin. The fuel lines ran through this area after they exited the frame rail towards the carburetor and combustion chamber. The vehicle was equipped with a 2.5L engine.

Undercarriage Inspection:

No fire damage was observed to the underside of the vehicle. The overall observation was that the fire began above the undercarriage and more specifically within the engine compartment. All four tires were found to be intact. The vehicle was on a GM frame with the GM fuel system.

Fuse Panel Inspection:

The fuse panel positioned behind the instrument panel in the dashboard did not sustain any fire damage. Several of the wiring harnesses going to the panel did sustain some melting. However, no evidence of adverse electrical activity was noted. The respective wiring harness associated with the fuse panel was inspected and did not reveal any unexpected damages from a fire with this intensity.

Fire patterns indicated the damage to this wiring was due to the heat extending from the engine compartment.

Area of Fire Origin:

The fire originated within the engine compartment. We were not able to determine the exact ignition source. However, fire patterns indicated the probable ignition sequence was leaking fuel in an atomized state igniting after contacting the engine exhaust

manifold, associated piping or other hot surface components. The vehicle was running during the event. The operating fuel pressure would normally be 41-47 psi with the key on and fuel pump operating.

Potential Contributing Factors:

A review of the USPS service records revealed that various different types of services had been conducted on LLV 1200431 over several years prior to the fire. None of the service records indicated any major services were completed within the engine compartment and most of the work was preventative maintenance.

Other potential contributing factors included a coolant leak causing an overheating event in the engine. However, no evidence was found to support this possibility. A backfire was considered due to the damage observed in the area of the spark plugs, although no evidence of a misfire was reported. An electrical failure was considered, however the conductors in the area of origin were observed to have no evidence of adverse electrical activity.

Evidence Collected:

There was no evidence collected at this juncture.

Interview:

We attempted to contact the carrier on several occasions. We received no return call from the carrier. Per Ms. [redacted] written statement to her supervisor, she had just finished gassing up the vehicle at the Sunoco station. As she was driving out of the lot she observed smoke coming out of the front and then the vehicle stopped running all together. An unknown citizen passing by contacted the Newark Fire Department.

Service Records:

The most current service records were obtained and reviewed. The most recent services to the vehicle were:

- 03/22/18 REPLACED SWITCH AND FUSIBLE LINK FOR STATER INTERRUPTER

- 03/16/18 REPAIRED BRAKE PEDAL AND MUFFLER AND TAILPIPE. REPLACED SPARK PLUGS, TRANSMISSION, DRIVE SHAFT AND COOLER LINES
- 11/21/17 REPLACED STARTER MOTOR

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jeffrey Wilson

Jeffrey Wilson, NAFI-CFEI
Fire Consultant

David R. Meyers

David R, Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

June 19, 2018
RCG File No. 47810507

Photograph 1
Front of United States Postal Service LLV 1200431.



Photograph 2
Top of engine block with air filter removed.



June 8, 2018
RCG File No. 47810507

Photograph 3
Right side of engine.



Photograph 4
Area with most severe burning.



June 8, 2018
RCG File No. 47810507

Photograph 5
Right side of engine.



June 19, 2018
RCG File No. 47810507

CVs



JEFFREY WILSON, CFEI FIRE CONSULTANT

Mr. Wilson is a Certified Fire & Explosion Investigator (NAFI-CFEI) with the National Association of Fire Investigators, a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard) and a New York State Fire Investigator. Mr. Wilson is a Licensed Private Investigator in the states of New York, New Jersey and Connecticut. He has investigated and determined the origin and cause of several hundred fires to include commercial structures, residential structures, vehicles and wild land. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Wilson has testified on several occasions involving the investigation of fires in New York.

Mr. Wilson entered the field of fire service in 1984 and received a Bachelor of Science in Fire Science in 1988. His professional career includes twenty years of experience as a New Rochelle Police Officer. He obtained the rank of Detective in 1995 and was later assigned to major case investigations in 2005 which included among other investigations, Arson. He obtained certification as a New York State Fire Investigator in 2005 and was then appointed to the Westchester County Cause and Origin team at that time, which he continues to serve on today. In addition to his law enforcement career, Mr. Wilson has over thirty years as a volunteer firefighter and obtained the rank of Fire Captain.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Columbia Southern University, Orange Beach, AL, 2009, 22 Master Degree credits
Mercy College, Dobbs Ferry, New York, Bachelor of Science Degree in Fire Science, 1988

Certifications:

Fire Service Professional Qualification (ProBoard) - Certified Fire Investigator # NY755050-1117-0069
National Association of Fire Investigators (NAFI) Certified Fire and Explosion Investigator (CFEI)
New York State Fire Investigator - Level 1, 2005
New York State Fire Investigator - Level 2, 2005
New York State Emergency Technician #129714, 1988

Licenses:

State of New York - Licensed Private Investigator #11000154190
State of Connecticut - Licensed Private Investigator # FA-2508
State of New Jersey – Licensed Private Investigator # 8253

Training:

IAAI-CFIT TRAINER	50 Hours
Electrical Cause Investigation I-	2009
Electrical Cause Investigation II-	2009
Fire Scene Evidence Collection-	2009
Fire Behavior & Arson Awareness-	2005
Principle of Fire Investigations-	2005
Cause & Origin Determination-	1987



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1431 Greenway Drive, Suite 900
Irving, TX 75038
(877) 271-1168 Telephone
(972) 518-0011 Facsimile

Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2017

January 6, 2017

Re: RCG File No: 02213936
LLV Number: 1200358
VMF Location: 1515 Crickets Avenue in Lubbock, TX
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 1200358 that occurred at 2121 Frankford Avenue in Lubbock, Texas, on August 19, 2016. In the course of our work, we examined and documented the fire-damaged vehicle, and interviewed the VMF Shop Supervisor on August 25, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 1515 Crickets Avenue in Lubbock, Texas. The work to complete this assignment was performed by Fire Consultant, Gary L. Cochran, IAAI-CFI. The report and case were technically reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to have originated at the fuel supply lines positioned on the mail side of the engine compartment.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of the fuel supply line becoming separated at the hose clip which allowed atomized gasoline to be sprayed onto the hot surfaces of the operating engine and ignite the vapors.

Observations

Exterior Inspection:

Exterior examination revealed severe fire damage to the engine compartment, with the most severe fire damage to the mail side of the engine compartment. Fire damage was observed to the exterior of the operator compartment.

Interior Inspection:

The interior examination of the vehicle, including the operator and cargo compartments, revealed that it had sustained severe fire damage to the passenger compartment, and minimal heat and smoke damage to the cargo compartment.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated on the front lower mail side of the engine compartment. We observed severe fire damage to the engine compartment, which is the area of origin and the entire passenger side of the engine compartment. We examined all fluid levels and all were within the recommended range. We examined the electrical system of the vehicle, and observed no adverse electrical activity or arcing within the electrical system. We examined the wiring harnesses within the vehicle and noted they were all intact. We observed that the battery cables had been damaged as a result of the fire, and disconnected prior to our examination. The vehicle was equipped with a GM fuel system located in the rear portion of the engine on the mail side. We were unable to identify the make of the fuel filter during our examination.

During our inspection of the area of origin, we observed two metal / rubber combination fuel lines and one rubber vacuum line. We observed that the rubber portion of the supply fuel line had separated from the metal clamp. Observation of the return fuel line revealed this line to be intact, and there was no separation of the line. The rubber vacuum line between the two fuel lines had been damaged and a portion of the rubber hose had been consumed as a result of the fire.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of soot, smoke, heat or fire damage. The involved LLV was mounted on a GM frame. We observed the area of origin on the lower front side of the engine.

Fuse Panel Inspection:

Examination of the fuse panel located within the operator's compartment revealed no evidence of soot, smoke, heat or fire damage. The fuse panel did not have a cover. No blown fuses were observed during our examination.

Area of Fire Origin:

The area of fire origin was determined to be on the lower front side of the engine compartment where two metal fuel lines were attached, and were routed back toward the engine. The two fuel lines originally had two rubber fuel lines connected to them with factory pressed hose clamps. The larger size line was the supply fuel line and the smaller line was the return fuel line.

The point of fire origin was on the larger fuel line (supply line).

There was physical evidence of the supply fuel line becoming separated from the factory hose clamp.

Potential Contributing Factors:

During our examination, we determined that the supply fuel line became separated from the factory hose clamp, causing fuel to spray onto the hot operating engine surface and hot exhaust system, causing the fuel vapors to ignite.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interviews:

We were not able to interview the carrier due to his work schedule.

We interviewed the VMF shop supervisor who did review the mail carrier's incident report. He stated that the carrier/operator had returned to the post office yard, parked the vehicle, and turned it off to go inside the building. Shortly after he was inside the building, another carrier pulled into the parking lot, saw smoke coming from the subject vehicle, and advised the carrier of the vehicle smoking. The carrier returned

outside to see thicker smoke from the vehicle and called 911. The Lubbock Fire Department arrived and extinguished the fire.

Service Records:

A review of the service records for the involved LLV did not indicate any recent repairs of service that would have caused or contribute to the cause of the fire.

We have requested a fire report from the Lubbock Fire Department.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gary L. Cochran

Gary L. Cochran, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

January 6, 2017
RCG File No. 02213936

Photograph 1

Front view of fire-damaged LLV.



Photograph 2

View of fire damage to engine compartment and driver side of vehicle.



Photograph 3

View of fuel lines in area of origin. The red line is the separated supply line; the orange line is the intact return line; and the blue line is the fire-damaged vacuum line.



Photograph 4

View of separated fuel line in area of origin.



January 6, 2017
RCG File No. 02213936

CVs



**GARY L. COCHRAN, IAAI-CFI, NAFI-CFEI & CVFI
FIRE CONSULTANT**

Mr. Cochran has more than 30 years of experience in fire service. He has actively served as a Fire Investigator for two separate municipalities, and has served as an active member of the Tarrant County Fire/Arson Investigator's Association and most recently with the Grapevine Fire Department, Texas, as the Fire Code Enforcement Officer and Fire Investigator. He was also the Fire Code Enforcement Officer and Fire Investigator for the Town of Westlake, Texas. Mr. Cochran has extensive training in fire and criminal investigations, as well as hazardous material, nuclear, chemical, and biological and EMS incidents. He is certified through the International Association of Arson Investigators as a Certified Fire Investigator (IAAI-CFI) as well as the National Association of Fire Investigator as a Certified Fire and Explosion Investigator (NAFI-CFEI) and Certified Vehicle Fire Investigator (NAFI-CVFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Fire Protection Technology, Tarrant County College
Fire Service Administration, Weatherford College
Occupational Safety & Health, A.A.S., Columbia Southern University
International Association of Arson Investigators (IAAI), Texas Chapter, 2007 - Present
International Association of Arson Investigators (IAAI), 2007 - Present
International Association of Fire Fighters (IAFF)
National Association of Fire Investigators (NAFI), 2005 - Present
Texas Firefighters Association, 1987 - Present
Tarrant County Fire and Arson Investigators Association (TCFAIA), 2005 - Present
North Texas Fire Investigators Association (NTFIA), 2008 - Present

SPECIALIZED EDUCATION

Complex Arson Investigation Techniques for the Insurance Industry (IAAI) 2014
A.A.S. - Occupational Safety & Health, Columbia Southern University 2012
Texas IAAI Arson Conference, Austin, TX 2012
Pate Hands-On Vehicle Fires – Tested 2012
CVFI (NAFI) - Tested 2012
Texas IAAI Arson Conference, Austin, TX 2011
NFA – Forensic Evidence Collection, Emmitsburg, MD 2011
South Texas Arson Conference, South Padre, TX 2010
NFA – Fire/Arson Origin and Cause Investigations, Emmitsburg, MD 2010
NFA 25–Inspections, Testing and Maintenance of Water Based Fire Protection Systems, Houston, TX 2010
NFPA 72 - Inspections Testing and Maintenance of Fire Alarms, Houston, TX 2010
East Texas Arson Seminar, Longview, TX 2009
Certified Fire Investigator (IAAI-CFI) Tested 2009
Legal Aspect of Fire Investigations, North Richland Hills, TX 2009
East Texas Arson Seminar, Longview, TX 2008
NFA – Developing Fire & Life Safety Strategies, Emmitsburg, MD 2008
NFA – Plans review for Inspectors, Emmitsburg, MD 2007
TCLEOSE Basic Police Officer 2007
Intermediate Fire/Arson Investigator 2007
Intermediate Fire Inspector 2007
IAAI Texas Chapter Arson Seminar, Austin, TX 2007
TEEX – Courtroom Preparation for First Responders, Benbrook, TX 2006
Certified Fire and Explosion Investigator (NAFI-CFEI) Tested 2006
Advanced Firefighter 2005
Juvenile Fire Setter Intervention Specialist I & II Tested 2005
IAAI Texas Chapter Arson Seminar, Austin, TX 2005
Hazardous Material Technician School, Dallas, TX 2000
Paramedic School, Hurst, TX 1985
Basic Firefighter School, Bedford, TX 1983



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
2355 Highway 36 West, Suite 400
Roseville, Minnesota 55113
(866) 746-5871 Telephone
(630) 321-1847 Facsimile

December 13, 2017

Re: RCG File No: 53800719
LLV Number: 1200633
VMF Location: 910 1st Street South Hopkins, Minnesota
Subject: Preliminary/Final Report

On November 20, 2017, a fire occurred involving LLV 1200633 on Highway 394W and Carlson Avenue near Wayzata, Minnesota. On November 25, 2017, Rimkus Consulting Group, Inc. was retained to examine LLV 1200633.

On November 29, 2017, we conducted an examination of the LLV at the Hopkins, Minnesota Vehicle Maintenance Facility located at 910 1st Street South in Hopkins, Minnesota. In the course of our work, we examined the vehicle, excavated fire debris, documented with photos, and interviewed the carrier. Our work to complete this assignment was performed by Fire Consultant Otto W. Soyk, IAAI-CFI (V). This report and case was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was at and around the exhaust manifold on the left side of the engine where oil was sprayed on the exhaust when an engine rod penetrated through the engine block.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a thrown rod through the engine block causing a hole in the engine block which allowed ignitable engine fluids to be expelled onto the hot surface of the operating LLV and ignite.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. We observed extensive fire and heat damage to the exterior of the vehicle with the greatest degree of direct fire damage at the front engine compartment. The front body components had sustained extensive damage. The rear body components were identifiable with a lesser degree of fire and heat damage as compared to the front engine compartment.

Interior Inspection:

The interior of the vehicle had sustained extensive direct fire and heat damage with the rear of the vehicle sustaining a lesser degree of fire and heat damage as compared to the front passenger compartment of the vehicle. We observed combustible materials in the form of undelivered mail on the floor of the vehicle cargo compartment at the rear of the vehicle. The mail had sustained some fire damage but was still identifiable. The front driver's compartment of the vehicle had been consumed to near completion as a result of the fire. There was no physical evidence observed on the interior of the LLV that would have caused or contributed to the cause of the fire.

Engine Compartment Inspection:

The engine compartment had sustained significant direct fire and heat damage with the combustible components having been consumed to near completion. The metal components in the engine compartment had sustained a greater degree of fire and heat exposure on the driver's side as compared to the passenger side of the vehicle. The engine oil filter was examined. The filter was in place and tight. The transmission fluid

dip stick was examined. The transmission contained fluid at an acceptable level within normal operating levels. There were no obvious electrical arc or failures identified that could have been causative of this fire.

An examination of the engine block was conducted. A large hole was observed on the left side of the engine block directly behind the exhaust manifold. The hole was parallel with the engine crank shaft and appeared to have been blown from the inside out by a piston rod failure. A large quantity of oil was observed on the back side of the exhaust manifold. Based on the fire patterns observed, the left side of the engine within the engine compartment was determined to be the area of origin.

Undercarriage Inspection:

We were unable to do a complete undercarriage examination of the vehicle for safety reasons. Loose components presented a drop hazard. From the areas of the undercarriage we were able to examine, the fire damage was consistent with a fire originating on the left front of the engine compartment.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage and mass loss. All fuses were damaged by the fire unable to be evaluated.

Area of Fire Origin:

The area of origin was the left front of the engine compartment.

Contributing Factors:

The piston push rod for the first cylinder sustained a catastrophic failure and punctured the engine block allowing engine oil to be expelled onto the hot surfaces of the exhaust manifold. The engine oil then ignited. The fire spread to surrounding combustible components.

Evidence Collected:

No evidence was collected.

Interview:

The LLV reportedly was being driven at the time of the fire; the carrier stated the vehicle made a loud “pop” sound, then she saw smoke coming from under the front of the vehicle.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Otto W. Soyk

Otto W. Soyk, IAAI-CFI (V)
Western Region Fire Division Manager

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

December 13, 2017
RCG File No. 53800719

Photograph 1
Front of the vehicle.



Photograph 2
Right exterior of the vehicle.



December 13, 2017
RCG File No. 53800719

Photograph 3

Oil filter in place and tight.



Photograph 4

Push rod for #1 cylinder coming through the engine block.



December 13, 2017
RCG File No. 53800719

Photograph 5

The remaining portion of the LLV.



Photograph 6

Photograph of the vehicle at the time of the fire (provided by USPS).



December 13, 2017
RCG File No. 53800719

CVs



**OTTO WILLIAM SOYK, C.F.I., C.A.I., S.C.L.A.
WESTERN REGION FIRE DIVISION MANAGER**

Mr. Soyk holds a Master of Arts Degree and Bachelor of Arts Degree from Governors State University in Illinois, in addition to numerous specialized training classes in specific areas. He is an Adjunct Professor at Penn Foster College where he developed and teaches a course in fire investigation and National Fire Protection Association, NFPA, 921 with a target participant of fire fighters and law enforcement. He is a Certified Fire Investigator through the International Association of Arson Investigators, a Certified Arson Investigator through the Illinois State Fire Marshall's office, and a Senior Claims Law Associate through the American Education Institute. Mr. Soyk holds certificates from Moraine Valley Community College in Automotive Technology. Mr. Soyk has testified as an expert witness in arbitration hearings as well as state criminal and civil courts and has been recognized as an expert in fireplace installations in arbitration hearings.

Mr. Soyk has an extensive background in fire investigation, criminal investigation, and insurance fraud investigation. His professional experience includes fire, and explosion investigation, electric fire ignition experimentation, full scale fire testing of ignition scenarios, as well as computer fire modeling.

Mr. Soyk has conducted numerous live fire training tests for fire fighters, as well as fire investigators using authentic room furnishings. In addition, he has prepared and presented numerous training sessions for law enforcement, fire fighters, claims adjusters, and the public. He has conducted over 2000 fire investigations including large multi-million dollar commercial losses.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Adjunct Professor - Penn Foster College
Master of Arts – Governors State University
Bachelor of Arts – Governors State University
Certified Arson Investigator - Illinois State Fire Marshall Office
Certified Fire Investigator - International Association of Arson Investigators
Certificate in Automotive Drive Train Technology MVCC
Breath-Alcohol Testing Operator
Member - International Association of Arson Investigators
Member - International Association of Arson Investigators (Illinois Chapter)
Past Member - International Association of Special Investigations Units
Past Member - International Association of Special Investigations Units (Illinois Chapter)

EMPLOYMENT HISTORY

2004 – Present	Rimkus Consulting Group, Inc.
1989 – 2004	American Family Insurance
1975 – 1989	Midlothian Police Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
277 Douglas Avenue, Suite 1008
Altamonte Springs, FL 32714
(407) 661-1245 Telephone
(407) 660-2277 Facsimile
Certificate of Authorization No. 8301

Report of Findings

**LLV 1200939 FIRE
ORLANDO, FLORIDA**

RCG File No: 01311041

Timothy G. Augustine

**Timothy G. Augustine, P.I., IAAI-CFI
Fire Consultant**

Jack R. Kennedy, III

**Jack R. Kennedy, III, IAAI-CFI
Eastern Region Fire Manager**

TABLE OF CONTENTS

I.	Introduction	1
II.	Conclusions	2
III.	Discussion	3
IV.	Basis of Report	7
V.	Attachments	8
	A. Photographs	
	B. CVs	

Section I

INTRODUCTION

Rimkus Consulting Group, Inc. was retained to conduct a fire origin and cause examination of LLV 1200939 that occurred on September 30, 2015, at 3050 Polynesian Isle Boulevard in Kissimmee, Florida.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time, as described in the **Basis of Report**. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Section II

CONCLUSIONS

1. A burn pattern analysis of the exterior, interior, undercarriage and engine compartment revealed that the area of fire origin was within the engine compartment.
2. Examination of the engine compartment revealed the area of greatest heat and fire damage occurred on the right side of the engine compartment as viewed from the front of the vehicle.
3. The point of fire origin was on the forward most area of the heat shield that covered the exhaust manifold as viewed from the front of the vehicle.
4. Examination of photographs provided by the United States Postal Service (USPS) vehicle maintenance staff revealed the engine was covered with oil residue during their initial examination.
5. It is our opinion, based upon the vehicle and burn pattern analysis, that engine oil had become displaced from the crankcase under pressure where the oil residue came in contact with the hot exhaust manifold causing ignition.

Section III

DISCUSSION

The examination and documentation of the vehicle fire damage proceeded utilizing a systematic approach, from the least damaged areas progressing to the greatest damaged areas. The inspection was documented using digital photography. In order to consider all possible ignition sources, the examination included the exterior, interior operators cab, cargo compartment, engine compartment and the undercarriage.

The USPS vehicle identification number LLV 1200939 and the vehicle identification number (VIN) was verified during the examination and was searched through VinLink vehicle identifier service. The vehicle was identified as a 1991 model year Chevrolet LLV 3-door cargo style van that was manufactured at the Moraine, Ohio plant with production sequence number 919483. The vehicle was a rear-wheel drive, postal service delivery vehicle powered by an L4, 2.5 Liter gasoline engine with automatic transmission and hydraulic brakes.

The vehicle examination was conducted at the USPS Vehicle Maintenance Facility at 10401 Post Office Boulevard in Orlando, Florida. The vehicle had been moved to the maintenance facility and had been placed in a vehicle service area to facilitate elevating the vehicle during the examination.

The examination of the undercarriage from an elevated position was performed with the assistance of USPS staff who positioned and raised the vehicle using the hydraulic safety lift. Visual examination of the undercarriage failed to reveal any indication of soot, smoke, heat or fire damage and as a result, the possibility of the fire originating beneath the vehicle was eliminated (**Photographs 1, 2 and 3**). The vehicle was on GM frame that provided an avenue for the fuel delivery tubing to be installed in a protected area (**Photograph 1**). The undercarriage was documented with digital photographs. During the undercarriage examination, the routed fuel lines where it met the in-line fuel filter was examined and photographed and was intact and free of soot, smoke, heat or

fire damage (**Photograph 4**). The fuel deliver components from the fuel tank to the engine were eliminated as being a cause or contributing factor of the fire.

The examination next progressed to the exterior of the vehicle. The exterior examination revealed no evidence of soot, smoke, heat or fire damage (**Photographs 5 - 9**).

The examination of the passenger compartment failed to reveal any evidence of soot, smoke, heat or fire damage and the fire was determined to have not originated in this area. The vehicle fuse panel was examined to the right of the driver's position and was intact and free of soot, smoke, heat or fire damage and was eliminated as the cause or a contributing factor of the fire. The fuse panel was observed to be without a cover. However, this missing cover did not have any bearing on the fire causation. (**Photographs 10 - 13**).

The examination next progressed to the engine compartment where the most severe heat and fire damage was observed (**Photograph 14**). Based upon the burn pattern analysis of the vehicle and the engine compartment, it is our opinion the fire originated within the engine compartment and the point of fire origin was identified as being on the right side of the engine as viewed from the front of the vehicle. Prior to our examination, staff at the VMF cleaned the engine to remove dry chemical extinguishing agent and during the cleaning removed the residue of oil observed immediately following the fire. Additionally, the heat shield and other operational components had been removed. Examination of the heat shield revealed severe heat and fire damage and residue of burned engine oil on the exterior and interior of the shield (**Photographs 15 and 16**). Examination of additional components removed revealed oil residue within the air intake ductwork (**Photograph 17**). The area and point of fire origin was reconstructed by re-installing the heat shield. Once re-installed in position, the point of greatest heat and fire damage was identified directly beneath the engine oil dipstick.

Interview

On October 8, 2015, Rural Carrier Associate, the driver/operator of LLV 1200939 on the day of the fire was interviewed. She provided the following information about the vehicle operation prior to the fire being discovered:

- She is responsible for pick-up and delivery of Route 51.
- She does not smoke.
- During the day she had driven approximately 37.6 miles.
- The vehicle was parked for approximately 2 minutes before smoke was discovered coming from the engine compartment.
- Two other Rural Carrier Associates witnessed the smoke coming from the vehicle and they extinguished the fire using a portable fire extinguisher.
- The subject LLV was not overloaded; however, the pick-up during Route 51 is normally heavy.
- The vehicle was fueled with 11.56 gallons of gasoline on September 30, 2015 at the Race Trac gas station located on Orange Blossom Trail.
- There were no aftermarket components in the vehicle at the time of the fire.
- There were no personal items in the vehicle.
- There were no indications of a problem with the vehicle while it was in operation.
- She was alerted to the smoke coming from the engine compartment by a co-worker.

- She denied smelling or hearing anything unusual prior to the fire being discovered.
- The vehicle was not being operated or moving when the fire was discovered.
- The vehicle operated normally during use prior to the fire being discovered.
- While her co-workers were extinguishing the fire, she observed fire on the right side of the engine compartment that was approximately one foot in height.
- Her co-workers who extinguished the fire used a portable extinguisher obtained from the Post Office facility building.
- She did not call 911.

It is our opinion, based upon the vehicle and burn pattern analysis, that engine oil had become displaced from the crankcase under pressure where the oil residue came in contact with the hot exhaust manifold causing ignition.

Section IV

BASIS OF REPORT

1. Burn pattern analysis of the exterior, interior, under carriage and engine compartment of the vehicle.
2. Burn pattern analysis of components that had been removed from the vehicle.
3. Reconstruction of components removed from vehicle prior to the examination.
4. Interviewed the driver/operator of the vehicle on the day of the fire.
5. Reviewed statements provided by USPS staff who observed and extinguished the fire.
6. VinLink Decoder research for the subject vehicle.
7. NHTSA web based database searched with negative results.
8. While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association 921 – “Guide for Fire & Explosion Investigations.”

Section V
ATTACHMENTS

A. Photographs

B. CVs

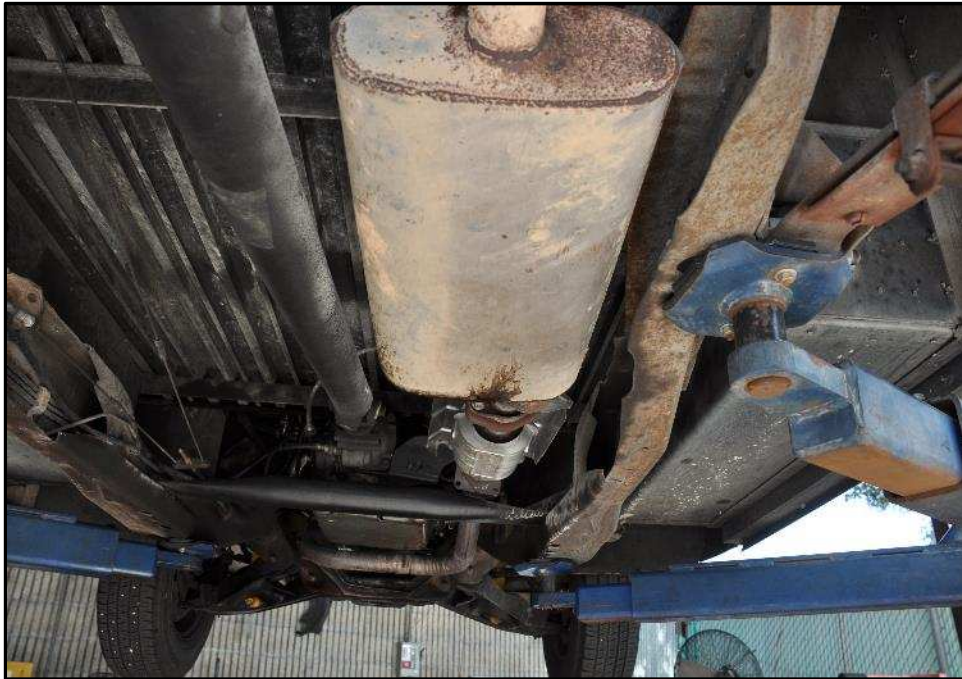
Section V
ATTACHMENT A

Photographs

Photographs taken during our inspection, which were not included in this report, were retained in our files and are available to you upon request.

Photograph 1

Undercarriage as viewed from rear of vehicle looking forward.



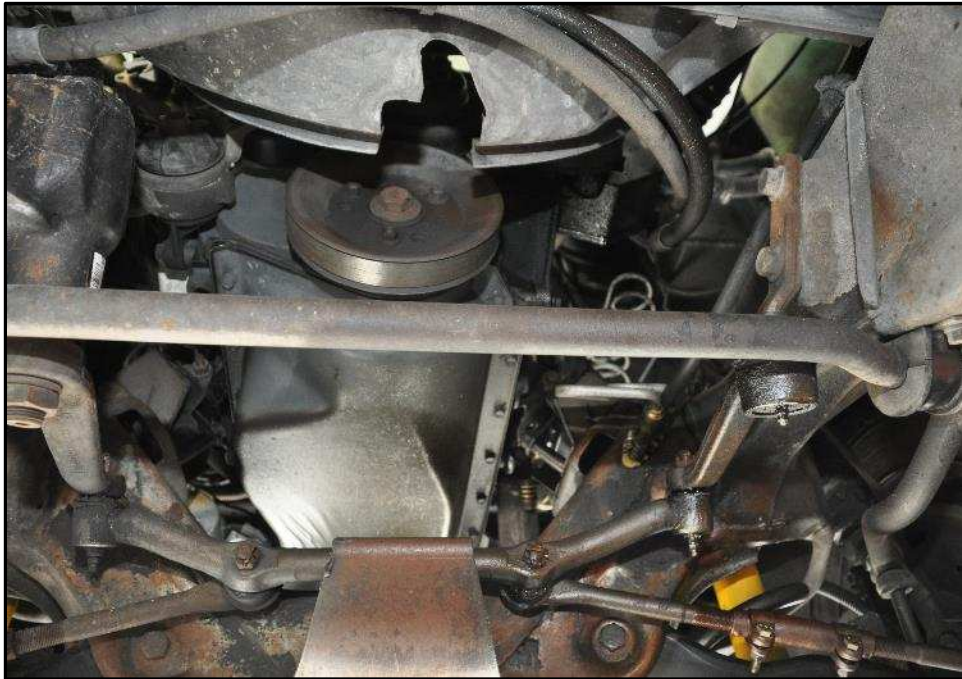
Photograph 2

Rear of undercarriage with fuel tank in view.



Photograph 3

The underside of the engine as viewed from the undercarriage.



Photograph 4

The fuel tubing and the in-line fuel filter as viewed from the undercarriage.



Photograph 5

Front view of the exterior of the vehicle.



Photograph 6

View of the driver's side and rear load door.



Photograph 7

View of the rear-loading door.



Photograph 8

View of the passenger side of the vehicle.



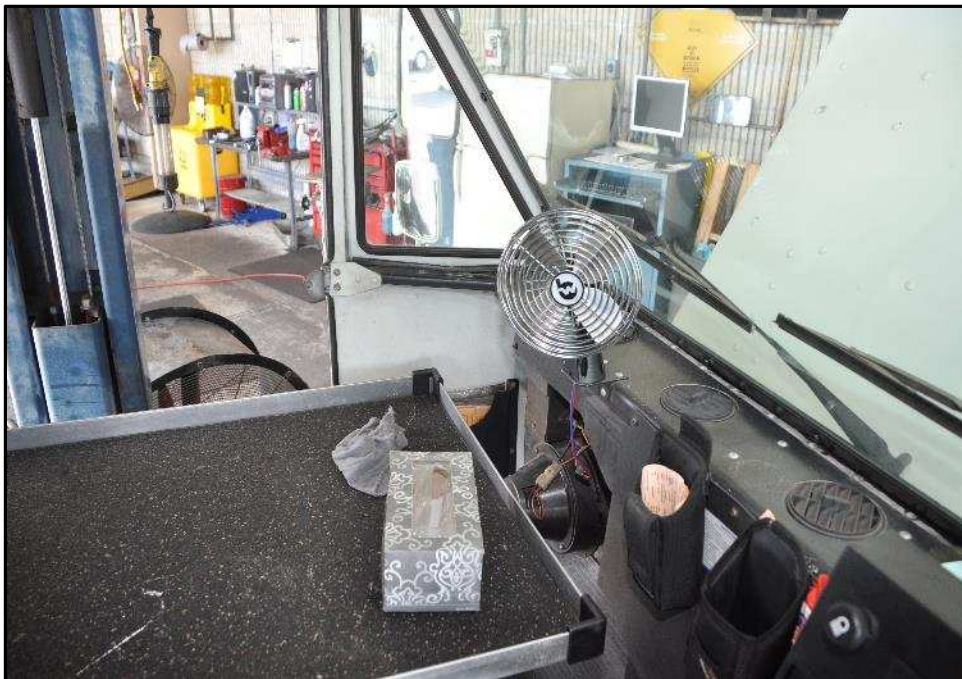
Photograph 9

View of the passenger side and the loading door.



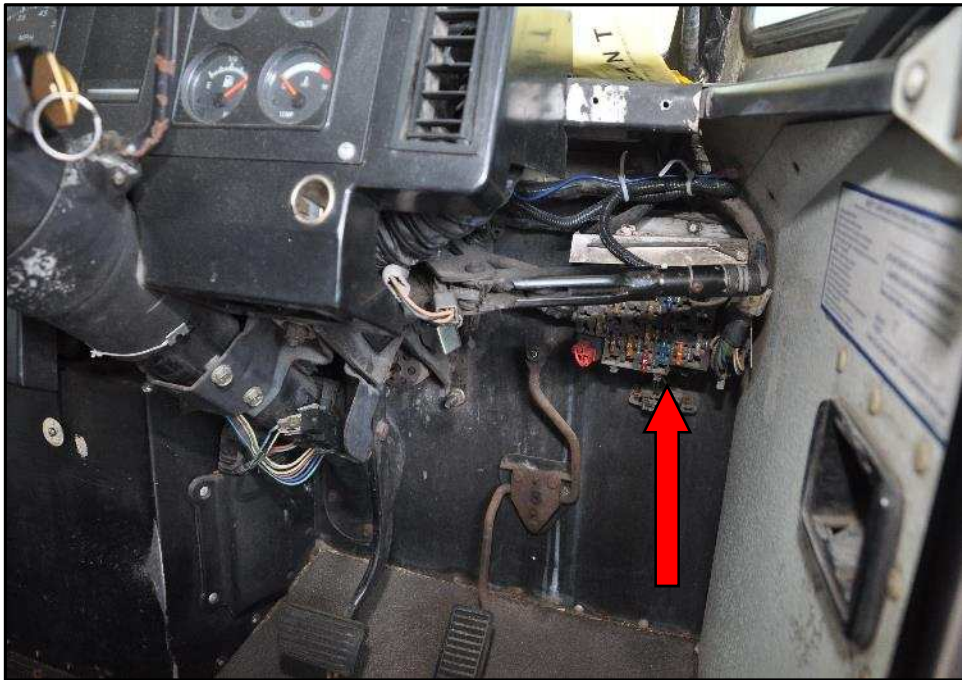
Photograph 10

View of the passenger side of the operators cab.



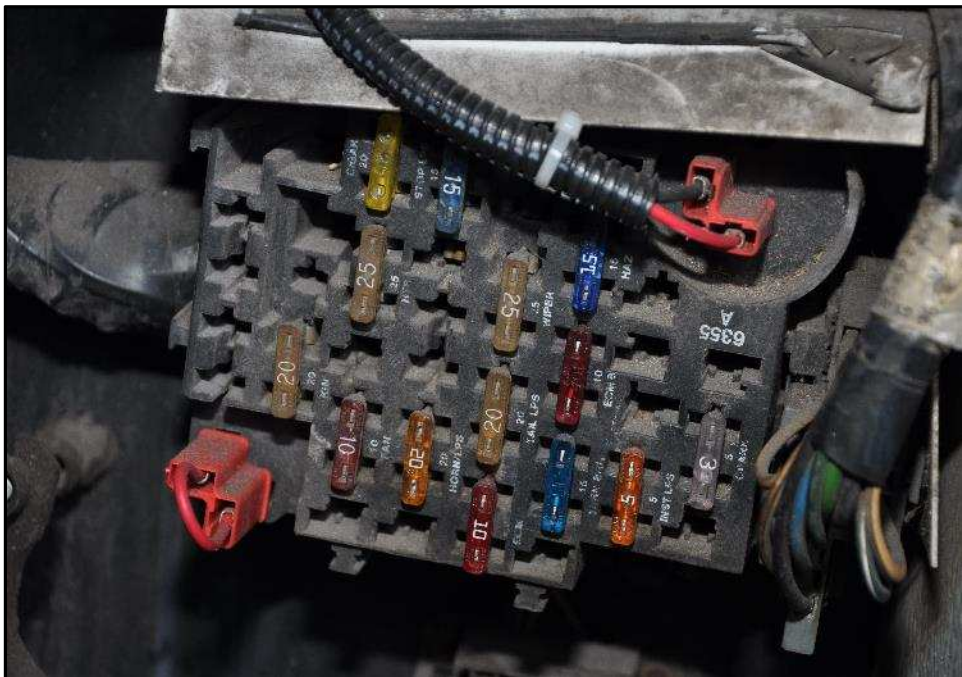
Photograph 11

View of the driver's position in the operators cab. The red arrow indicates the fuse panel mounted against the bulkhead.



Photograph 12

View of the uncovered fuse panel examined to the right of the driver's position.



Photograph 13

View of the interior of the cargo compartment from the rear of the vehicle.



Photograph 14

View of the engine compartment as documented by USPS staff following the fire.



Photograph 15

View of the exterior of the oil stained and heat damaged heat shield from the engine.



Photograph 16

View of the interior of the oil stained and heat damaged heat shield.



Photograph 17

View of the air intake hose revealing a build-up of oil deposits.



Photograph 18

View of the heat shield following re-installing it to the position at the time of the fire. Note the high temperature area that has been circled and proximity to the oil dipstick.



Photograph 19

View of the engine oil level dipstick revealing level of oil during the examination.



Section V
ATTACHMENT B

CVs



TIMOTHY G. AUGUSTINE, IAAI-CFI, IABTI FIRE AND EXPLOSION CONSULTANT

Mr. Augustine's professional career includes over 22 years of public service with the Prince George's County Fire Department in Maryland, where he achieved the rank of Battalion Chief. His experience includes: fire suppression, basic and advanced emergency medical response, cardiac rescue technician, fire safety inspections, code enforcement, fire department management, fire and law enforcement instruction, and battalion command.

He has worked in the fire service as a sworn law enforcement fire investigator, bomb technician, and bomb squad commander. During that time he conducted thousands of fire scene investigations to include: residential and commercial structure fires, commercial vehicles, passenger vehicles, heavy equipment, vessels and explosives render-safe procedures, and post blast investigations.

Mr. Augustine has been recognized for his achievements in receipt of the following awards: State of Maryland - Governor's Citation, Prince George's County Executive's Honorary Award for Meritorious Service, Prince George's County Fire Department – Fire Fighter of the Month, and two Unit Citations for work on criminal investigation of an arson case resulting in a life sentence for the perpetrator and rendered safe procedures and conviction in a bombing incident.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Licensed Private Investigator – State of Florida, since 2007
Certified Fire Investigator, National Board on Fire Service Professional Qualifications
Certified Fire Investigator, International Association of Arson Investigators
International Association of Arson Investigators – International Member
International Association of Arson Investigators – Florida Chapter
International Association of Bomb Technicians and Investigators (IABTI) – International Member
Recognizing and Investigating Marijuana Grow Houses & Meth Labs – IAAI Florida Chapter
Command and Control of Manmade/Natural Disasters – U. S. National Fire Academy
Law Enforcement Basic Training – Prince George's County Police Department Academy
Hazardous Devices School, Missiles and Munitions Center & School – Redstone Arsenal - Federal Bureau of Investigation (Basic and 2 Refresher Classes)
Bomb Squad Commanders Schools (2) – Federal Bureau of Investigations
Advance Improvised Explosive Devices and Terrorist Activities – IABTI
Chemical/Biological Terrorism Workshop – Maryland Emergency Management Agency
Explosive/Post Blast Seminar – Bureau of Alcohol, Tobacco, and Firearms (BATF) - Naval Service Warfare Center – Dahlgren, VA
Firearms Instructor School – United States Secret Service – Beltsville, MD
Fire/Arson Investigations – Federal Bureau of Investigations – Quantico, VA
Arson for Profit – Bureau of Alcohol, Tobacco, and Firearms (BATF)
Maryland Arson Investigators In-Service School (1986-1988) – Maryland Fire and Rescue Institute University of Maryland
Maryland Arson Investigators In-Service School (Instructor) (1989-1993) – Maryland Fire and Rescue Institute (MFRI) – University of Maryland
Career Fire Officers Candidate School – Prince George's County Fire Department
Maryland Fire Service Certification – Fire Fighter III – MFRI – University of Maryland
Maryland Fire Service Certification – Fire Instructor I – MFRI – University of Maryland
Maryland Fire Service Certification – Fire Officer II – MFRI – University of Maryland
Maryland Fire Service Certification – Fire Instructor II – MFRI – University of Maryland
Certified Aerial Lift, Scissor Lift, and Forklift Operator



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
5707 South Laburnum Avenue
Richmond, VA 23231
757-229-2226 Telephone
(888) 286-9943 Facsimile

August 9, 2016

Re: RCG File No: 47602643
LLV Number: 1202299
VMF Location: 809 Aberdeen Road in Hampton, Virginia
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 1202299, which reportedly occurred at 319 Circuit Lane in Newport News, Virginia on May 2, 2016 at 2:00 P.M. In the course of the work, we examined and documented the fire-damaged vehicle, and interviewed the carrier/operator on May 9, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 809 Aberdeen Road in Hampton, Virginia on May 9, 2016. The work to complete this assignment was performed by Fire Consultant William R. Clark, IAAI-CFI. This report and file are being reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach, as recommended in the current edition of National Fire Protection Association's NFPA-921, "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the left side of the engine compartment in and around the routed fuel lines.
3. The specific ignition sequence and cause of the fire was the direct result of an unspecified failure of the fuel line which cause atomized gasoline to be sprayed and

the vapors were ignited on the hot operating components of the engine compartment.

Observations

Exterior Inspection:

The left fender, engine hood, and the roof above the operator's area displayed significant fire damage. The cargo area only displayed minor fire damage. Interior Inspection:

The interior examination of the vehicle revealed that the dashboard had sustained severe damage to the left side. The fire originated in the engine compartment and entered the operators' area through the fire wall and windshield, causing severe damage to this area. However, in contrast, the area of the right step displayed moderate fire damage. The ECM had displayed moderate fire damage to the exterior housing of the unit.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment, revealed that fire originated on the left side of the engine, in the area of the fuel lines. The six inch rubber fuel line had been destroyed. The oil and transmission pans had been drained by VMF personel. The battery sustained moderate damage. The electrical conductors located on the left side of the engine and dashboard area were examined, and no visable adverse electrical activity was observed. The fuel filter was located on the left side of the engine in the area of the fuel lines. The engine was a 2.2 liter. There was no physical evidence observed that would indicate that the LLV was equipped with a High Energy Ignition (HEI) Distributor.

Undercarriage Inspection:

Examination of the undercarriage revealed significant oxidation to the framing, mainly near the engine compartment. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel inside the cab had sustained moderate fire damage.

Area of Fire Origin:

The area of origin was determined to be the left side of the engine. The specific area of origin was determined to be in and around the fuel lines routed through the area of origin.

Contributing Factors:

The cause of the fire was due to an unknown failure involving the fuel line. Once the failure occurred, fuel made contact with the heated surfaces of the engine, igniting a fire.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interview:

The driver, was interviewed on May 5, 2016, by telephone. She reported that she left the post office around 10:00 A.M., and the fire occurred at 2:00 P.M. She heard a loud pop and observed smoke from the engine area. She immediately turned the vehicle off. A neighborhood resident came around the corner and advised her that the vehicle was on fire. Once she exited the vehicle she observed fire coming from the front and bottom of the vehicle. She further stated that once she exited the vehicle she detected an odor of fuel. She had fueled the vehicle on that day, but only \$15.00 worth.

Service Records:

A review of the provided service records did not indicate any work or repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William R. Clark

William R. Clark, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Eastern Region Fire Manager

Attachments: Photographs, CVs

August 9, 2016
RCG File No. 47602643

Photograph 1
Front of vehicle.



Photograph 2
Right side of the vehicle.



August 9, 2016
RCG File No. 47602643

Photograph 3
Back of vehicle.



Photograph 4
Left side of the vehicle.



August 9, 2016
RCG File No. 47602643

Photograph 5
View of the undercarriage.



Photograph 6
Interior view of vehicle.



August 9, 2016
RCG File No. 47602643

Photograph 7
Interior view of vehicle.



Photograph 8
Fire damage to the left side of engine hood.



August 9, 2016
RCG File No. 47602643

Photograph 9
View of engine compartment.



Photograph 10
Area of origin – left side.



August 9, 2016
RCG File No. 47602643

CVs



**William “Bill” Clark, IAAI-CFI, CFEI, CVFI
Fire Consultant**

Mr. Clark is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (VACFI) with the Virginia Department of Fire Programs. Mr. Clark is a Registered Private Investigator with the Virginia Department of Criminal Justice Services.

Mr. Clark has conducted over 900 fire/explosions investigations as a law enforcement officer and private fire investigator. These fire/explosion investigations have involved commercial & residential structures, as well as heavy equipment and vehicles. Mr. Clark has extensive experience investigating fires involving injury and death. Mr. Clark has also conducted investigations involving hazardous materials. Mr. Clark has instructed firefighters, police, and military in fire investigation procedures, death investigations, evidence collection, homemade explosives, and post blast investigations, weapons of mass destruction & clandestine lab recognition and safety.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Tidewater Community College, Virginia Beach, VA
Associates in Fire Science, 12 Credit Hours

Virginia Department of Fire Programs
Firefighter 1, 2, & 3, 1987

Virginia Department of Criminal Justice Academy, Petersburg, VA
Police Academy, 1989

National Fire Academy, Emmetsburg, MD
Fire/Arson Investigation Course, 1996

Virginia Department of Forensic Sciences, Lynchburg, VA
Death Investigation, 2000

Greater Cincinnati Regional Arson and Fire Investigation Association
Fire Investigation, 2003

North Carolina/South Carolina International Association of Arson Investigators Fire Investigation Seminar, 2015

Virginia State Police, Richmond, VA
Vehicle Theft Investigation, 2003

Virginia Chapter of the International Association of Arson Investigators
Electrical Fire Investigation, 2000
Fire Investigation, 2001
Small Appliance Fire Investigation 2001
Fire Investigation, 2003
Fatal Fire Investigation, 2004
Fire Investigation, 2008
Meeting the 1033/921 Challenge, 2013

William “Bill” Clark, IAAI-CFI, CFEI, CVFI

Bureau of Alcohol, Tobacco, Firearms, & Explosives, Richmond, VA
Post Blast Investigation, 2004

Virginia Department of Fire Programs, Norfolk, VA
Environmental Crimes Investigations, 2005
Arson Scene Evidence Processing, 2009

Central Shenandoah Criminal Justice Training Academy, Weyers Cave, VA
Crime Scene Investigations Course, 2005

Central Virginia Criminal Justice Academy, Lynchburg, VA
Reid Interviewing Techniques, 2006
Reid Interview Advanced Techniques, 2007

Public Agency Training Council
Vehicle Fire Investigation Course, 2006
Arson Evidence Collection Course, 2007
Arson for Profit Course, 2009

Federal Emergency Management Agency, Anniston, AL
Hazardous Materials Technician, 2008

Zero Point, Virginia Beach, VA
Advanced Homemade Explosives, 2012

Safety Unlimited
HAZWOPER Training & Certification, 2014

Member of: National Association of Fire Investigators
 International Association of Bomb Technicians & Investigators
 International Association of Arson Investigators
 Virginia Chapter – International Association of Arson Investigators

EMPLOYMENT HISTORY

2014 to Present	Rimkus Consulting Group, Inc.
2006 to 2014	Fire Technology Consultants, LLC (Part Time)
2009 to 2012	Joint Improvised Explosive Device Defeat Organization (MPRI Contractor)
2004 to 2009	Albemarle County Fire Marshal's Office
2003	Donan Engineering Company
2001 to 2006	Danielson Investigative Services (Part Time)
2001 to 2006	Fire Analysis Consulting Group (Part Time)
1998 to 2003	Amherst County Sheriff's Office
1989 to 1998	City of Franklin Police Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
3620 Horizon Drive, Suite 200
King of Prussia, Pennsylvania 19406
Telephone: (610) 941-5599

February 12, 2020

Re: RCG File No: 100023734
LLV Number: 1202918
VMF Location: 17 South Commerce Way Bethlehem, Pennsylvania
Subject: Preliminary/Final Report

Dear

On January 2, 2020, a fire occurred involving a US Postal Service LLV# 1202918 with VIN: 1CBCS10A4M2921593. The vehicle was examined on January 13, 2020 at the USPS Leigh Valley VMF at 17 South Commerce Way in Bethlehem, Pennsylvania. The fire incident reportedly occurred at 200 South Courtland Street in East Stroudsburg, Pennsylvania.

Rimkus Consulting Group, Inc. was retained to investigate the origin and cause of the fire. The investigation was assigned to and completed by Fire Consultant Patrick T. Earley, IAAI-CFI. A technical review of this report was completed by Technical Fire Manager David R. Meyers IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusion

1. The fire originated in the undercarriage in the rear mail side of the involved LLV.
2. The specific area of the origin was the area where the exhaust tailpipe comes into contact the combustible plastic shroud of the fuel tank.

3. The specific ignition sequence included the heating of the plastic shroud on the fuel tank to its ignition temperature, this was caused by the constant heating from the misaligned exhaust tailpipe in the area of origin.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. We observed no exterior fire damage to the vehicle. At the time of our inspection all the wheels and tires were intact and inflated.

Interior Inspection:

We observed no fire damage or evidence of fire spread to the interior of the vehicle.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a 2.5 Liter General Motors engine, with throttle body injection fuel delivery system and standard ignition coil. The battery was intact, and we observed no evidence of fire damage.

Undercarriage Inspection:

The vehicle was equipped with a GM frame, the undercarriage of the vehicle exhibited fire damage. We observed no evidence of collision, but we did observe the presence of a misaligned exhaust tail pipe on the mail side of vehicle. This most probable cause was impact with a stationary object (i.e. a curb or other similar item).

Fuse Panel Inspection:

The fuse panel was intact, and we observed no fire or heat damage to this component.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated in the rear mail side undercarriage in the area of the plastic fuel tank shroud and exhaust pipe. The specific area of the origin was the area where the exhaust tailpipe comes into contact the combustible plastic shroud of the fuel tank.

Potential Contributing Factors:

The specific ignition scenario included the heating of the plastic shroud on the fuel tank to its ignition temperature, this was caused by the constant heating from the misaligned exhaust tailpipe in the area of origin.

Evidence Collected:

None.

Witness Statement:

The post office stated the vehicle was problematic but no reports to VMF were conducted. The vehicle was in a parking lot and a maintenance employee was warming it up due to reports of a rough idle. The employee was outside of the vehicle while the vehicle was warming up. Flames were noticed under the vehicle and the maintenance employee turned the vehicle off and used a fire extinguisher to douse the flames.

Service Records:

Reported rough idle prior to fire. Vehicle was being evaluated at time of fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Patrick T. Earley

Patrick T. Earley, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

February 12, 2020
Rinkus File No. 100023734

Photograph 1
Front of vehicle 1202918.



Photograph 2
View of the rear mail side undercarriage.



Photograph 3

View of the remains of the melted plastic shroud in proximity to exhaust pipe.



Photograph 4

View of the exhaust tailpipe in close proximity to the rear mail side bumper.



February 12, 2020
Rimkus File No. 100023734

Curriculum Vitae



Patrick T. Earley, CFI, CFPS, CFEI

Fire Consultant
Fire Division

Background

Mr. Earley holds a B.A. in Criminal Justice Administration and is a Certified Fire Investigator with the International Association of Arson Investigators, a Certified Hazard Recognition Specialist with National Fire Protection Association and a Certified Fire and Explosions Investigator with the National Association of Fire Investigators along with a number of other certifications.

He has over 25 years of experience in the fire and emergency services, serving in many capacities in the fire service industry from firefighter (volunteer) to fire Inspector, fire investigator, and fire official (acting), along being an emergency medical technician, fire instructor, and fire protection specialist. He has also served on several technical committees for the National Fire Protection Association.

Besides being a subject matter expert in fire and life safety by the NFPA, Mr. Earley offers a wide array of knowledge in fire investigation, fire protection systems, and life safety codes. Most recently, he developed the course and test content for the NFPA Certification Certified Hazard Recognition Specialist. He has a strong discipline in not only fire investigation, but fire protection and fire prevention.

Contact Information

(972) 518-0900

pearley@rimkus.com

3620 Horizon Drive
Suite 200
King of Prussia, PA 19406



Rimkus Consulting Group, Inc.
10 Kimler Drive, Suite G
Maryland Heights, MO 63043
(888) 286-0127 Telephone
(314) 432-9501 Facsimile

February 16, 2016

Re: RCG File No: 53502398
LLV Number: 1253131
VMF Location: 2105 E Cook Street in Springfield, Illinois
Subject: Final Report

On December 7, 2015, a fire involving LLV 1253131, VIN 1CBCS10A4M2921769 occurred. At the time of the fire, the vehicle was located on a parking lot at 191 West Michigan Ave. in South Jacksonville, Illinois.

On December 8, 2015, Rimkus Consulting Group, Inc. was retained to examine LLV 1253131. Our inspection of the vehicle occurred on December 17, 2015, at the USPS Vehicle Maintenance Facility located at 2105 E. Cook Street in Springfield, Illinois. In the course of our work, we completed an onsite inspection of the vehicle, including photographing the vehicle, collecting evidence and interviewing the driver of the vehicle. This report and case was reviewed by, Jack R. Kennedy III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the interior operator compartment of the involved LLV.
2. The specific area of origin within the interior operator compartment was determined to be in and around the dashboard area.

3. The specific ignition sequence and cause of the fire was consistent with a failure involving the headlamp/dimmer switch which heated to the point of ignition and spread to surround combustible materials.

Observations

Exterior Inspection:

An exterior examination of the vehicle began at the front and continued in a clockwise direction. Exterior fire damage was extensive to the front portion of the vehicle. The most severe damage was visible within the passenger compartment and decreased moving toward the front of the vehicle. The rear portion of the hood was partially consumed. As a result of radiant heat, the vehicle's windows had been broken, with fire damage and mass loss visible to the upper portion of the driver's door opening and the front portion of the roof. Visible fire patterns indicated the driver's door was open during the fire. The rear of the vehicle sustained no fire damage. The passenger side had fire damage visible to the front of the door. Visible fire patterns indicated the passenger door was closed during the fire.

Interior Inspection:

Fire damage and mass loss was observed throughout the front of the vehicle, and most of the combustible materials had been consumed. Fire debris was systematically excavated within the passenger compartment and fire patterns were analyzed. The most profound area of damage was observed to the dash on the driver side of the vehicle. The remains of the headlight control switch were located on the floor, below the dash, on the passenger side of the steering column. The headlight control switch remains were collected and retained as evidence.

Engine Compartment Inspection:

The engine exhibited the most severe fire damage along the driver's side of the bulkhead and decreased from back to front. The physical damage to the bulkhead was severe and most of the bulkhead had been melted or consumed during the fire. In our opinion, the fire did not originate within the engine compartment.

Undercarriage Inspection:

The inspection of the vehicle undercarriage was completed using a lift inside of the Vehicle Maintenance Facility. The undercarriage of the vehicle sustained no fire damage related to the cause of the fire. The fire damage visible from the underside of the vehicle was caused by radiant heat from above. In our opinion, the fire did not originate along the underside of the vehicle. The LLV was mounted on a GM frame. The LLV was equipped with the factory OEM fuel filter system.

Fuse Panel Inspection:

The remains of the fuse panel were recovered from the debris below the dash panel, on the driver side of the vehicle. Fire damage and mass loss to the fuse panel was severe. No physical evidence of adverse electrical activity was observed on the remains of the fuse panel.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, the fire originated within the passenger compartment of the vehicle. A more specific area of fire origin was in or around the dashboard of the vehicle.

Contributing Factors:

Contributing factors identified during the course of our inspection were identified as a potential failure associated with the headlamp/dimmer switch positioned in the dashboard of the LLV.

Evidence Collected:

The remains of the headlight control switch, along with the wiring harness which supplied DC power to the headlight control switch, were labeled and removed. These items were catalogued and shipped to the Rimkus office in Charlotte, North Carolina for retention.

Evidence was examined in the lab and we could not eliminate a failure of the headlight/dimmer switch that was collected from the area of fire origin.

Interview:

On December 18, 2015 a telephone interview was completed with the driver of the vehicle. During the interview, he reported the following information:

- On the date of the fire, he was driving the listed vehicle on his mail delivery route. While driving the vehicle along Church Street, he smelled what he thought to be burning plastic.
- He drove the vehicle a short distance further, and he then exited the vehicle for a delivery. Upon re-entering the vehicle he again smelled the odor of burning plastic.
- He pulled the vehicle off the street onto a nearby parking lot. As he was parking the vehicle, he noticed a "whisp" of smoke coming from the dash area.

- He turned the vehicle's ignition switch off, and then reached up and attempted to turn the headlights off. When he pushed the switch, the switch was hot to the touch. The pressure he exerted against the switch caused the switch to collapse into the dash.
- He immediately observed smoke coming from the hole where the switch had been, and a few seconds later, flames emerged through the same hole.
- He had not observed any other mechanical problems on the day of the fire.

Service Records:

A review of the provided service records indicated that the LLV last received PM on July 22, 2015. On October 9, 2015, the vehicle was in service due to the driver door not opening. Mileage on the work order indicated the LLV had 70,737 miles. The service was completed by a VMF. There were no indications of any work having been performed in the area of fire origin prior to the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Phillip M. Noah

Philip M. Noah, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

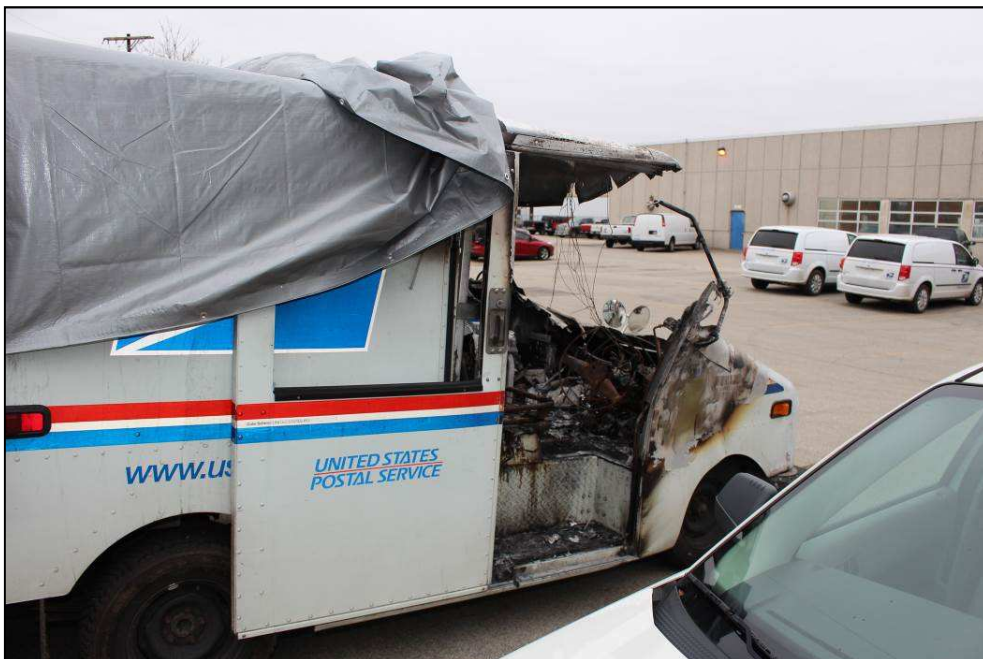
Attachments: Photographs, CVs

February 16, 2016
RCG File No. 53502398

Photograph 1
Exterior view of the vehicle.



Photograph 2
Exterior view of the vehicle.



February 16, 2016
RCG File No. 53502398

Photograph 3

View of the dash area from the front exterior.



Photograph 4

Remains of the headlight control switch on the floor below the dash.



February 16, 2016
RCG File No. 53502398

CVs



Philip M Noah, IAAI-CFI Fire Consultant

Mr. Noah is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson investigators and a Certified Fire Investigator (CFI) in the State of Missouri. Mr. Noah is a licensed Private Investigator in the State of Arkansas; Mr. Noah is a licensed Private investigator and licensed Private Fire Investigator in the State of Missouri. Mr. Noah has over 27 years of experience in fire suppression operations, fire/explosion investigations, technical rescue, hazardous material incidents, fire code enforcement, and building construction plans review. He has lead or assisted in the origin and cause of more than 300 fire and explosion investigations. As a fire investigator he conducted origin and cause investigations on fatal structure fires, residential fires, commercial fires and vehicle fires.

Mr. Noah held the position of Fire Marshal with the Springfield Mo Fire Dept. from 2009 to 2015. As a Fire Marshal Mr. Noah served as a public safety bomb technician on the Springfield Mo. Bomb squad, and was a founding member of the Greene County, Missouri Arson task force, during this time he worked closely with the FBI and ATF. While in this position he also performed hundreds of building plans reviews looking for International Fire Code compliance. Mr. Noah has testified and been qualified as an expert in court proceedings pertaining to fire origin and causation.

Mr. Noah has instructed courses in fire scene evidence preservation, explosives awareness and fire investigation awareness for the insurance industry.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Missouri State University - General education and Chemistry
Drury University - Law Enforcement Academy
Certified Fire Investigator: IAAI (Tested)
Licensed Private Fire Investigator: State of Missouri
Licensed Private Investigator: State of Missouri
Certified Fire Investigator: State of Missouri (Tested)
Class "A" Peace officer license: State of Missouri (Tested)
Certified Firefighter 1&2: State of Missouri (Tested)
Certified Fire Officer 1&2: State of Missouri (Tested)
Certified Fire Inspector: State of Missouri (Tested)
Certified Fire Inspector 1&2: International Code Council (Tested)
Certified Bomb Technician: Federal Bureau of Investigation (Tested)
Certified Fire Service Instructor: State of Missouri (Tested)
Certified Major Crimes Investigator: Springfield Mo Police Department (Tested)
International Association of Arson Investigators, 2010- Present
Missouri Professional Fire and Fraud Investigators (past)
International Association of Fire Fighters (past)



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus North Carolina, PLLC
5900 Harris Technology Blvd, Suite P
Charlotte, NC 28269
(704) 896-6227 Telephone
(704) 896-6228 Facsimile
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2017

March 8, 2017

Re: RCG File No:

	47107698
LLV Number:	1253603
VMF Location:	201 N. Murrow Boulevard in Greensboro, North Carolina
Subject:	Preliminary/Final Report

Dear

Rimkus North Carolina, PLLC was retained to examine LLV 1253606, VIN 1GBCS10A5M2922221. The vehicle was examined at the USPS Greensboro Vehicle Maintenance Facility (VMF) located at 201 N. Murrow Boulevard in Greensboro, North Carolina. The fire incident reportedly occurred at 500 Carolina Avenue in Thomasville, North Carolina on November 19, 2016.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on February 20, 2017. Our work to complete this assignment was performed by Fire Consultant David R. Meyers, IAAI-CFI. This report and case was reviewed by Technical Fire Manager Jack R. Kennedy III, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the interior operator compartment of the involved LLV.

2. The specific area of fire origin was determined to be in and around the headlamp switch positioned in the dashboard of the involved LLV.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure in the headlamp switch involving the rheostat, which heated and ignited available combustible materials.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed in the engine compartment and the operator compartment. Total mass loss was observed to the windshield, front right side of the vehicle, engine hood assembly, dashboard, and multiple engine components. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage to the operator compartment and smoke staining to the cargo area. Minor fire damage was observed in the cargo area. The most severe fire damage and mass loss was observed to the dashboard area, firewall, steering wheel assembly, and driver's seat. Based on the fire patterns observed, the dashboard area in front of the driver's seat behind the headlight switch assembly area was determined to be the area of origin.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a General Motors (GM) 2.5L gasoline engine. Severe fire damage was observed towards the rear of the engine compartment at the bulkhead. The air filter cover and filter were examined and observed with minor fire damage. Electrical wires that transverse the area above the air filter and carburetor were damaged by fire and were thermally damaged, thus eliminating them as a cause. The fuel system was examined and found to be intact, but was observed with minor fire damage. The fuel filter was observed with minor fire damage and was observed intact, located along rear of the engine near the fire wall. The fuel filter system was the GM model.

The battery for the vehicle was located at the front-right side of the engine compartment and had minor fire damage to the rear of the battery. The battery, the battery terminals, and battery cables were examined and found to be damaged by thermal damage only; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid, and brake fluid were examined and observed to be within their normal operating range. The carburetor was examined and observed with minor fire damage to the top portion of the carburetor where the air filter housing was mounted.

An examination of the engine block was conducted. No fire damage was observed to the rear area of the engine in the area of the bulkhead. No internal failures of the engine were observed.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks or failures.

Fuse Panel Inspection:

Examination of the fuse panel revealed severe fire damage to the panel and all of the fuses. Due to the severe fire damage, we were not able to determine if any fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, that the fire originated in the operator compartment on the dashboard at the headlamp switch assembly.

Contributing Factors:

The LLV reportedly was being driven at the time of the fire and the carrier observed smoke coming from the dashboard area and from behind the headlamp switch mounted on the left side of the dashboard in front of the driver's seat. The vehicle was pulled to the side of the road when fire was observed coming from the dashboard behind the headlamp switch.

The remains of the headlamp switch assembly were found in the fire debris on the driver's side floorboard area and examined. Adverse electrical activity was observed to a terminal blade remaining on the switch and mounting bracket. Due to the severe fire

damage, it was unable to be determined which terminal blade the activity was on. The most severe fire damage to the dashboard area was observed in the area where the headlight switch was mounted.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

On February 20, 2017, an interview was conducted with the USPS VMF Supervisor at the Greensboro office. Mr. reported the following information:

- Mr. was notified of an LLV that had a fire in the passenger and engine compartment areas. He had the vehicle towed to the VMF in Greensboro, North Carolina.
- Mr. stated that they have had previous issues with the headlight switch in this vehicle and several others.
- Mr. stated that several headlight switches had issues if installed improperly, and they had replaced several switches over the last year.
- An examination of a headlight switch that was installed in this make/model was conducted. It was determined that when the wiring harness was installed, if the ground terminal was not installed into the terminal properly, it could possibly create an adverse electrical event generating heat at the terminal that could potentially contribute to a fire in the dashboard.

Service Records:

A review of the provided service records for the involved LLV was conducted. There was no recent listed service work or repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NORTH CAROLINA, PLLC

David R. Meyers

David R. Meyers, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 8, 2017
RCG File No. 47107698

Photograph 1

1991 Chevrolet LLV 1253603, VIN 1GBCS10A5M2922221.



Photograph 2

Rear of vehicle.



March 8, 2017
RCG File No. 47107698

Photograph 3

Left side of vehicle. Arrow indicates severe fire damage to the dashboard area.



Photograph 4

Rear cargo area. Arrow indicates progression of the burn patterns extending from the passenger compartment area toward the rear cargo area.



March 8, 2017
RCG File No. 47107698

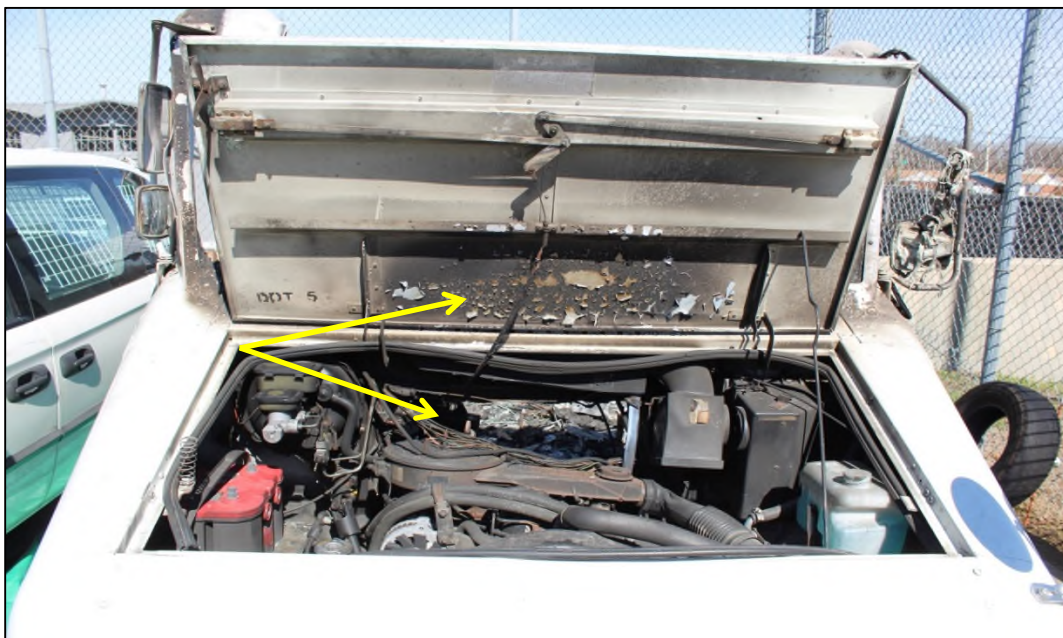
Photograph 5

The engine compartment hood assembly. Arrow indicates progression of the burn patterns extending from the dashboard area.



Photograph 6

The engine compartment and underside of the hood assembly. Arrows indicate fire damage to front area and more severe towards the bulkhead and passenger compartment.



Photograph 7

The driver's seat and dashboard area. Circle indicates gauge panel and location the headlight switch was located.



Photograph 8

The dashboard area and steering column. Arrow indicates most severe fire damage progression from the location the headlight switch was located.



Photograph 9

The remains of the dashboard and gauge cluster assembly.



Photograph 10

The floor board and lower dashboard in front of the driver's seat. Arrow indicates the more severe fire damage is high on the dash and lower portions are less severe.



March 8, 2017
RCG File No. 47107698

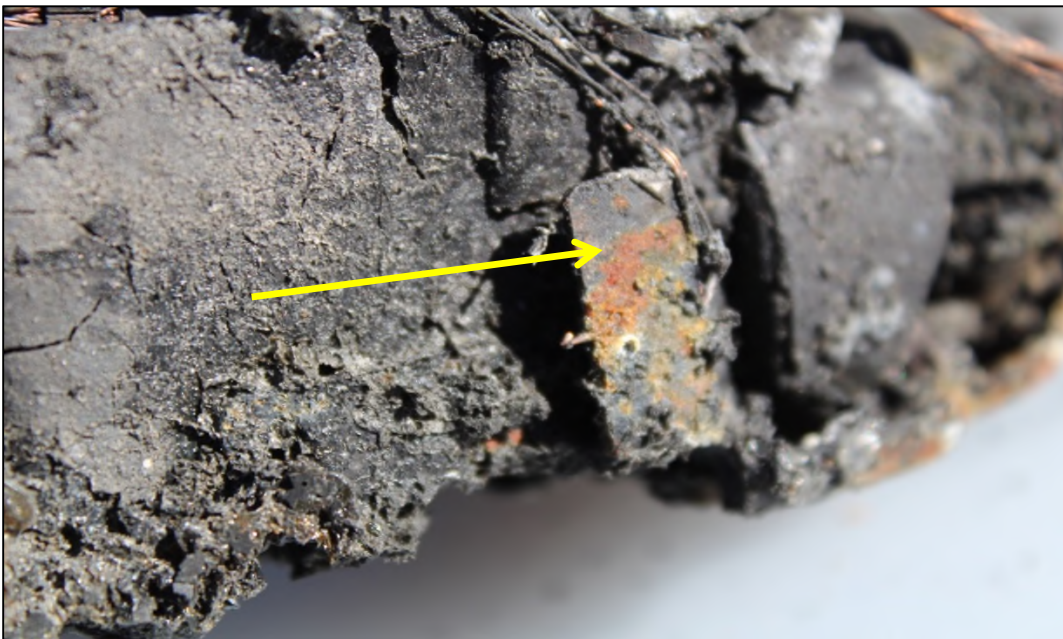
Photograph 11

The remains of the headlight switch assembly.



Photograph 12

Observe the adverse electrical activity on the terminal blade.



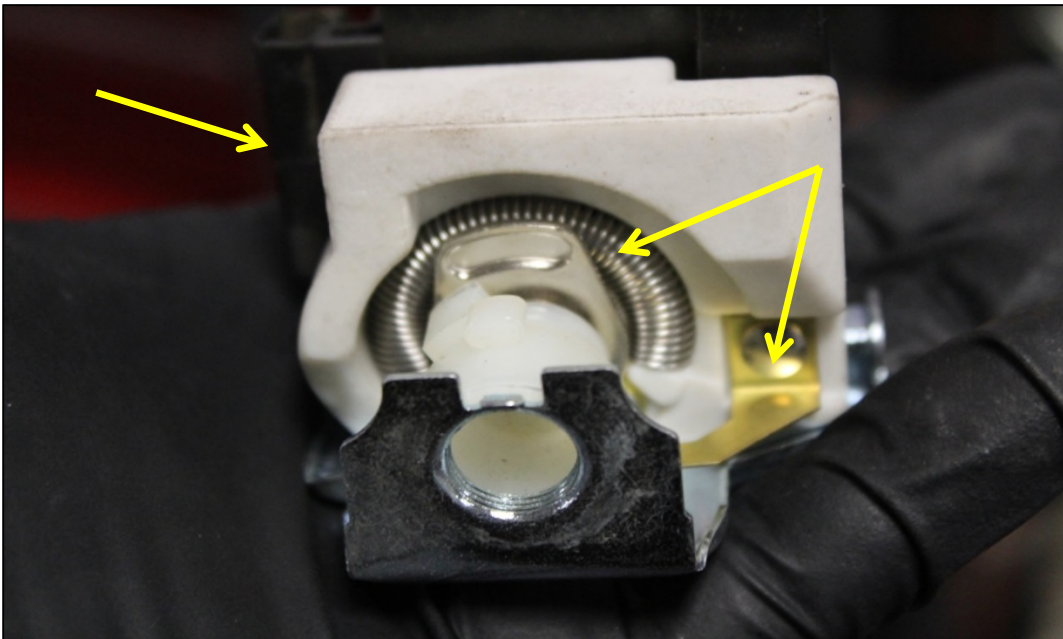
Photograph 10

The front of the switch and the coil spring damage.



Photograph 10

The replacement headlight switch. Arrows indicate the coil spring assembly and terminal.



March 8, 2017
RCG File No. 47107698

CV



DAVID R. MEYERS, IAAI-CFI FIRE CONSULTANT

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Kaplan University,
Bachelors in Fire Science, Current Student (2015 Graduation)

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
1431 Greenway Drive, Suite 900
Irving, Texas 75038
(877) 271-1168 Telephone
(972) 518-0011 Facsimile

Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2018

May 14, 2018

Re: RCG File No: 02215573
LLV Number: 1253673
VMF Location: 401 Dallas/Ft. Worth Turnpike Dallas, Texas
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 1253673, VIN 1GBCS10A5M2922302. The vehicle was examined at the USPS Vehicle Maintenance Facility located at 401 Dallas/Fort Worth Turnpike in Dallas, Texas. The fire incident reportedly occurred on L&J Service Center in Dallas, Texas on February 27, 2017. The vehicle was in the process of having maintenance preformed at the time of the fire.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on March 14, 2018. Our work to complete this assignment was performed by Fire Consultant Donald G. Moser, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated within the engine compartment of the involved LLV.
2. The specific area of origin was at and around the wiring harness routed at the right side of the engine.

3. The specific ignition sequence and cause of the fire was determined to be an adverse electrical event at the wiring harness cable that was routed through a retaining clamp (P-clip) at the right side of the engine. The cable exhibited physical evidence consistent with adverse electrical activity and the cable was severed at the retaining clamp. The retaining clamp exhibited physical evidence consistent with adverse electrical activity and contact arcing. The source of the fire's ignition was caused by contact arcing between the energized cable and the metal retaining clamp.
4. Wear and degradation of the components allowed an unfused adverse electrical event to develop at the energized cable that connected to the engine starter where it was in direct contact with the metal retaining clamp at the right side of the engine compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. There was no fire, heat or smoke damage to the exterior of the vehicle.

At the time of the inspection, all of the tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the tire, brakes, brake lines, wheels or axles had failed. All doors were observed in working order at the time of the fire.

Interior Inspection:

Interior examination of the driver's compartment did not reveal any evidence of fire related damage. All components were in place and no evidence of smoke or soot was identified. The rear cargo area sustained no fire, heat or smoke damage.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5 L, four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had an electronic ignition system. There were no observed leaks from the hoses or reservoirs.

The battery for the vehicle was located at the front right side of the engine compartment. The battery and the battery terminals were examined and found to be undamaged and

intact; no adverse electrical activity was observed. The battery and battery terminals were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid, and brake fluid were examined and observed to be within their normal operating range.

Fire pattern analysis and an examination of the remaining physical evidence within the engine compartment, revealed the fire originated on the right side of the engine at a retaining clamp attached to the engine block. The battery cable to the engine starter was routed from the battery at the right side of the compartment through two retaining clamps at the right side of the engine block. The first clamp was located at the front of the engine and the second was located toward the rear. The fire occurred at the second retaining clamp. The first clamp and portions of the cable running through the clamp were undamaged and the clamp was lined with rubber insulation around the interior surfaces and edges. At the second clamp, the cable was completely severed and both ends of the circuit exhibited globular shaped molten copper consistent with electrical activity and arcing. The second retaining clamp was bare of any insulating material and exhibited a single arc point that penetrated the wall of the retaining clamp. Minor fire damage was noted to nearby wiring insulation and other combustible components.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM general frame and was undamaged. The fuel lines were positioned above the open frame to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

Examination of the fuse panel did not reveal any problems or blown fuses.

Area of Fire Origin:

The area of origin for the fire was determined to be the driver side of the engine compartment. Located in this area was a wiring harness and fuel lines. Examination of the wiring harness revealed evidence of resistance heating at the P-clip securing the harness.

Potential Contributing Factors:

The specific ignition sequence and cause of the fire was determined to be the direct result of an electrical conductor being chaffed and worn causing the exposure of the

electrical conductor. This action resulted in contact arcing, which ignited the protective insulation on the conductor and then spread to the other combustible materials located nearby.

Wear and degradation of components allowed an adverse electrical event to develop at the wiring harness where it was in direct contact with the retaining clamp at the right side of the engine.

Evidence Collected:

No evidence was collect. All components were secured in place.

Service Records:

A review of the service records for the past year did not reveal any indications of repairs made in the specific area of the cable and retaining clamp.

The vehicle was brought to the L & J Service Center for repairs. It was reported that vehicle wouldn't start. L & J Service Center determined that the MAP sensor hose needed replacement.

Witness Statement:

It was reported by maintenance personnel that the fire occurred when the vehicle was at L & J Service Center for repairs. The L & J contractor, Mr. , reported that he had shut-off the vehicle after working on it and was notified that there was smoke coming from the engine compartment. The fire was quickly extinguished with a portable fire extinguisher.

Multiple attempts were made to interview Mr. with no return phone calls.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Donald G. Moser

Donald G. Moser, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

May 14, 2018
RCG File No. 02215573

Photograph 1

View of the exterior of the unit.



Photograph 2

View of the interior of the unit.



May 14, 2018
RCG File No. 02215573

Photograph 3

View of the fire damage to the engine compartment.



Photograph 4

View of the damaged conductors at the P-clip.



May 14, 2018
RCG File No. 02215573

CVs



DONALD G. MOSER, IAAI-CFI, NAFI-CFEI & CVFI SENIOR CONSULTANT

Mr. Moser has more than 30 years of experience in fire service. He has actively served as a Fire Investigator for two separate municipalities, and has served as an active member of the North Tarrant County Arson Task Force, North Texas Fire Investigator's Association, Central Texas Fire Investigators Association, and most recently was the primary investigator and Fire Code Enforcement Officer for the Town of Westlake, Texas. Mr. Moser has extensive training in fire and criminal investigations as well as response to hazardous material, nuclear, chemical, and biological and EMS incidents. He is certified through the International Association of Arson Investigators as a Certified Fire Investigator (IAAI-CFI) as well as the National Association of Fire Investigators as a Certified Fire and Explosion Investigator and a Certified Vehicle Fire Investigator (NAFI-CFEI & CVFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Associate in Applied Sciences, Fire Protection Technology, Tarrant County College
International Association of Arson Investigators (IAAI), Texas Chapter, Board of Directors, 2009-2010

International Association of Arson Investigators (IAAI)

International Association of Fire Fighters (IAFF)

National Association of Fire Investigators (NAFI)

Texas Firefighters Association

Texas Tactical Police Officers Association (TTPOA)

Tarrant County Fire and Arson Investigators Association (TCFAIA)

Central Texas Fire Investigators Association (CTFIA)

North Texas Fire Investigators Association (NTFIA)

Northeast Tarrant County Hazardous Materials Response Team

SPECIALIZED EDUCATION

Texas IAAI Conference, 2009, 2010, 2011, 2016

IAAI Annual Training Conference, 2009, 2014

IAAI Expert Courtroom Testimony Program, Brenham, TX 2007

Electrical Fires, IAAI Conference, Arlington, TX 2007

Auto Theft/Arson Insurance Fraud, North Texas Fire Investigators Association, 2007

Principles of Electrical Fires, Central Texas Fire Investigators Association, 2007

Hands-on Vehicle Fire Investigation, Public Agency Training Council, 2006

Hands-on Electrical Fire/Arson Investigation, Public Agency Training Council, 2006

Electrical Fires Seminar, Goodson and Associates / East Texas Fire Investigators Association, 2005

Vehicle Fires Seminar, Lee Cole and Associates, 2005

Drug Lab Fire Investigations Seminar, ATF, 2005

Response to Chemical and Biological Incidents, Northeast Tarrant County Hazardous Materials Response Team, 2004

International Fire Code Overview, Building Professionals Institute, 2004

Tactical Medical Response, Cypress Creek EMS, 2000



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
6990 Columbia Gateway Drive, Suite 110
Columbia, MD 21046
(877) 872-2999 Telephone
(410) 872-9111 Facsimile

May 12, 2017

Re: RCG File No:

47508870
LLV Number: 1253596
VMF Location: 6A Waelchli Avenue in Halethorpe, Maryland
Subject: Preliminary/Final Report

Dear

On April 22, 2017, a fire occurred in a US Postal Service vehicle at 12407 Dover Road in Reisterstown, Maryland. On April 27, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1991 Chevrolet LLV 1253596 with a vehicle identification number (VIN) of 1GBCS10A9M2922268. On May 1, 2017, we conducted a fire origin and cause examination on the vehicle at US Postal Service Maintenance Facility located at 6A Waelchli Avenue in Halethorpe, Maryland.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Charles W. Feeley, IAAI-CFI. A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the vehicle.
2. The specific area of origin was determined to be on the left side of the engine.

3. The point of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
5. We could not eliminate the possibility of an engine fluid leak (i.e.: fuel, oil, transmission fluid) onto a hot engine surface as the possible cause of the fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed in the engine compartment, cargo area, and the mail compartment. Total mass loss was observed to the windshield, engine hood assembly, dashboard and multiple engine components. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size and manufacturer which were Goodyear LT 195/75 R15. There was no evidence to indicate that the brakes, wheel assemblies, or axles had failed. The fuel cap was in place and secured.

The front of the vehicle had sustained severe fire damage. The cover for the engine compartment had been consumed by the fire. The bulkhead between the engine compartment and the driver's compartment had also been consumed. Severe fire damage was observed to the left, mail side of the vehicle. The left front fender had been consumed. The left side mail door and aluminum frame had partially melted. Severe fire damage was also observed to the cargo area. The rear rolling door had sustained severe fire and heat damage. The right, driver's side sustained fire and heat damage to the driver's door in the area of the window. The right front fender sustained fire and heat damage to the upper portion. The entire aluminum roof of the vehicle had melted as the result of thermal exposure from the fire. The aluminum side walls had failed and were observed pushed outward due to severe heat and fire damage on the interior of the vehicle.

The exhaust system was observed with thermal damage only. The rear wheels, brakes, brake lines, and tires were observed with thermal fire damage only. The right front tire, wheel, brake, and brake line had sustained minor fire damage. The left tire sustained

minor fire damage. The brakes, brake lines and wheels were observed with external thermal damage only. The rear axle was not leaking or damaged. The transmission was undamaged. The fuel lines were intact along the left open frame. The flexible fuel lines at the cross over to the right side above the transmission were observed with severe fire damage and mass loss.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage throughout. All combustible seating material had been consumed, exposing the metal seat frame. The steering column and brake pedal assembly had been severely fire damaged. The mail tray had collapsed and partially melted. Numerous packages of paper products remained with charring around the edges. The rear cargo area sustained fire, heat, and smoke damage throughout. The left side panel sustained severe fire and heat damage. The front bulkhead had been consumed. The fuse block located on the right side of the driver's compartment had fallen into the engine compartment and was too severely damaged by the fire to be evaluated. There was no evidence of adverse electrical activity to the circuits that were observed. The ignition was too severely damaged to be evaluated. The heater fan was not present in the debris and coil was found on the ground beneath the front left tire. The wiring harness was examined and no evidence of adverse electrical activity was observed.

The most severe fire damage was observed at the bulkhead, dashboard, windshield, and steering column. The burn patterns observed to the interior area progressed upward and outward from the engine compartment. After a review of the progression of the burn patterns it was determined the fire progressed from the engine compartment into the mail compartment through the manufactured holes in the bulkhead and due to the failure of the windshield.

Engine Compartment Inspection:

Examination of the engine compartment revealed severe fire damage throughout the compartment. The vehicle was equipped with a GM 2.5L, four-cylinder gasoline engine. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the engine compartment. The engine compartment sustained fire, heat, and smoke damage throughout. The damage was most severe on the left side of the engine compartment. The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been partially consumed. The melted remains of the fuse box from the mail compartment and the attached wiring harness were inspected. The wiring harness sustained fire and heat damage. The insulation had been consumed. The alternator sustained severe fire and heat damage. The insulation had been consumed from the conductors to the alternator. The main conductor was secure with no evidence of adverse electrical activity. The auxiliary

conductor was secure. The top of the battery case had sustained fire and heat damage. The conductors and terminals had become detached from the battery. The negative conductor was attached to the frame and to the block. The main positive conductor was attached to the starter. The insulation had been consumed but displayed no evidence of adverse electrical activity. The fuel rail was intact but had sustained severe fire damage. The injectors sustained heat damage but were intact. The fuel lines had sustained severe fire damage but were intact. The power steering unit positioned at the left front of the engine sustained fire damage. The flexible return line and reservoir had been consumed. The upper radiator hose sustained fire and heat damage. The flexible section of the vapor return line from the fuel tank to the canister mounted in the grill had been consumed. The canister had sustained fire and heat damage. The flexible section from the canister to the solenoid at the rear of the throttle body had been consumed. The starter was undamaged by the fire and the conductors were secure. The insulation had been consumed on the conductors routed across the engine from the battery to the starter.

The fuel line was intact from the carburetor to the fuel filter positioned at the bulkhead. The flexible section of fuel line from the left front of the vehicle to the fuel filter had been consumed. The fixed fuel lines at the left front of the engine compartment were in place the flexible lines and vapor line from the front of the frame had sustained fire and heat damage. The vapor line to the charcoal canister positioned in the left front corner had been consumed. The charcoal canister sustained fire and heat damage.

Undercarriage Inspection:

Examination of the rear undercarriage revealed no evidence of soot, smoke, heat, or fire damage. There was an accumulation of oil residue on the rear axle. The undercarriage in the area of the engine sustained no fire or heat damage. There was an accumulation of oil residue present. The involved LLV was mounted on a GM frame. The fuel lines were positioned within the open frame routed to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. The fuel lines were routed above the transmission to the right side of the engine. The rubber sections of the fuel lines at the transmission were intact. The top of the transmission sustained severe fire damage from the engine compartment. The damage was most severe below the connection of the fuel filter. The rear axle was not leaking or damaged. The transmission was undamaged. The transmission cooling lines were intact. There were two bolts absent from the cover of the torque converter. The fuel lines were intact along the left open portion of the frame. The fuel lines were intact inside of the box type frame in the engine compartment.

Fuse Panel Inspection:

The fuse panel of the mail compartment which had fallen into the engine compartment was observed with severe fire damage. Examination of the fuse panel revealed severe

fire damage and mass loss to the panel and all of the fuses. Due to the severe fire damage and mass loss we were not able to determine if any were fuses were open.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated within the engine compartment of the vehicle. The area of origin was determined to be on the left side of the engine compartment. The more specific area of origin was determined to be below the fuel filter connection to the flexible fuel line. The specific point of origin could not be conclusively identified due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination. We could not eliminate the possibility of an engine fluid leak (i.e.: fuel, oil, transmission fluid) onto a hot engine surface as the possible cause of the fire.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interview:

Ms. the carrier was interviewed on April 29, 2017, and provided the following information:

- She does not normally drive this vehicle.
- She last drove this vehicle two weeks prior to the fire.
- She started her route at approximately 11:30 A.M. and had driven approximately 10 miles.
- The fire occurred at approximately 1:15 P.M.
- She had been having trouble accelerating since the beginning of the route.
- The trouble increased as the day progressed.
- She was going up a hill when the vehicle lost power and began smoking.

- She had to pull over into a driveway due to a loss of power and to investigate.
- She opened the hood and called for a replacement vehicle.
- She was advised it would be a while until the replacement vehicle arrived.
- She decided to walk part of the route while waiting for a vehicle to be delivered.
- She delivered mail to 4 boxes.
- When she turned around, she saw fire under the vehicle.
- She called 911.
- The fire appeared to be on the ground near the front of the vehicle.
- The fire then appeared on the mail side of the vehicle.

Service Records:

A review of the service records provided for the involved LLV did not reveal any recent repairs or work that would have caused or contributed to the cause of the fire. The last preventative maintenance was reported to be March 2017.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,

RIMKUS CONSULTING GROUP, INC.

Charles W. Feeley

Charles W. Feeley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

May 12, 2017
RCG File No. 47508870

Photograph 1

A view of the exterior front of the vehicle.



Photograph 2

A view of the exterior left, mail side of the vehicle.



May 12, 2017
RCG File No. 47508870

Photograph 3

A view of the exterior rear of the vehicle.



Photograph 4

A view of the exterior right, driver's side of the vehicle.



May 12, 2017
RCG File No. 47508870

Photograph 5

A view of the interior driver compartment of the vehicle.



Photograph 6

A view of the interior cargo area of the vehicle.



May 12, 2017
RCG File No. 47508870

Photograph 7

A view of the rear undercarriage of the vehicle.



Photograph 8

A view of the undercarriage of the vehicle beneath the left side of the engine compartment.



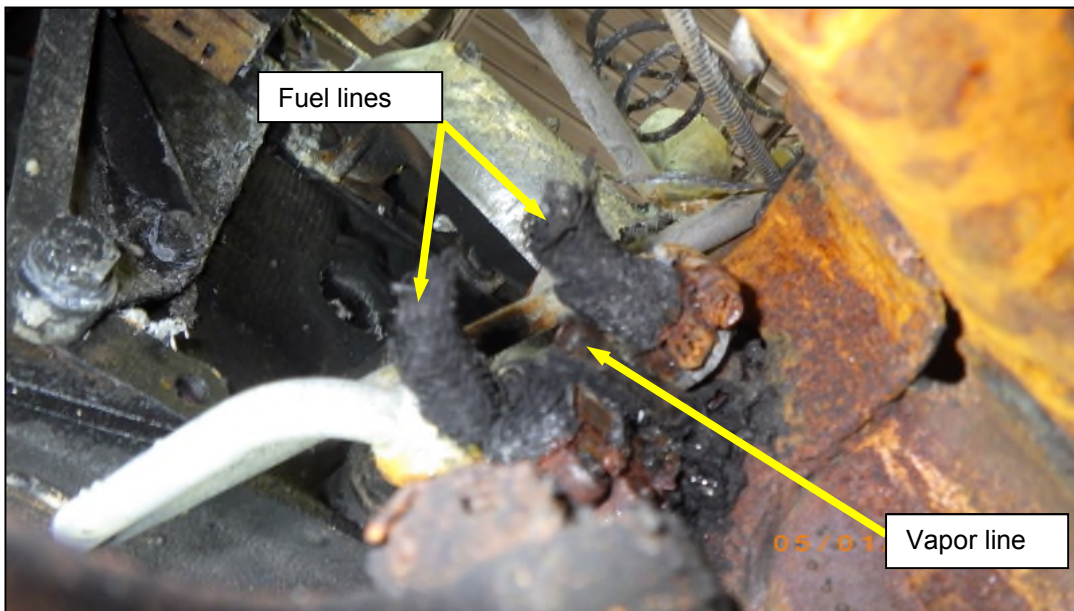
Photograph 9

A view of the fuel lines positioned along the left side of the frame.



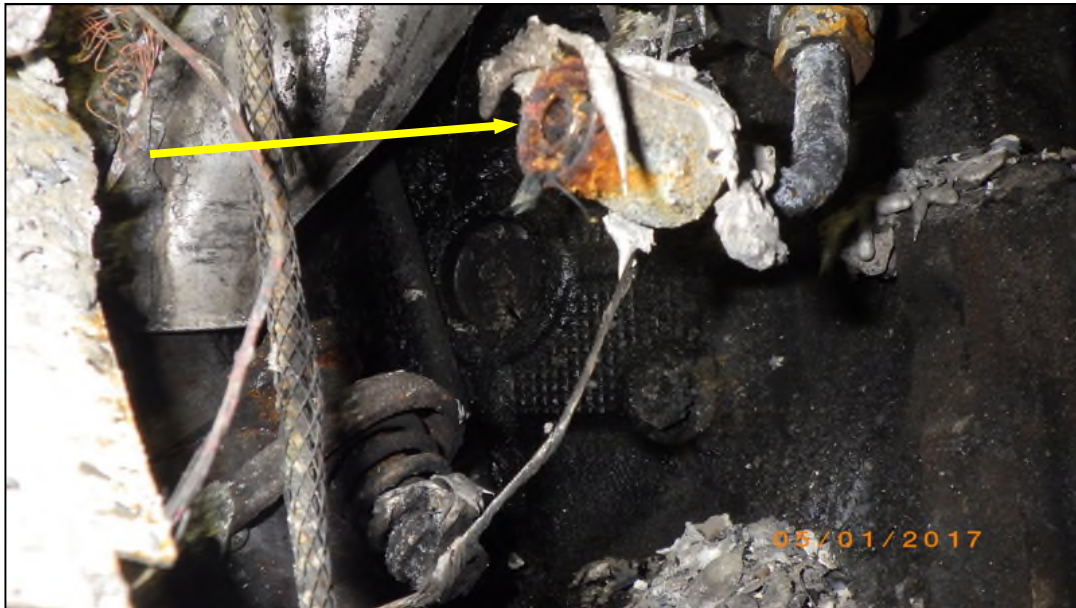
Photograph 10

A view of the fuel lines in the left front corner of the engine compartment.



Photograph 11

A view of the fuel line at the connection to the fuel filter.



Photograph 12

A view of the carburetor and fuel lines.



May 12, 2017
RCG File No. 47508870

Photograph 13

A view of the alternator.



Photograph 14

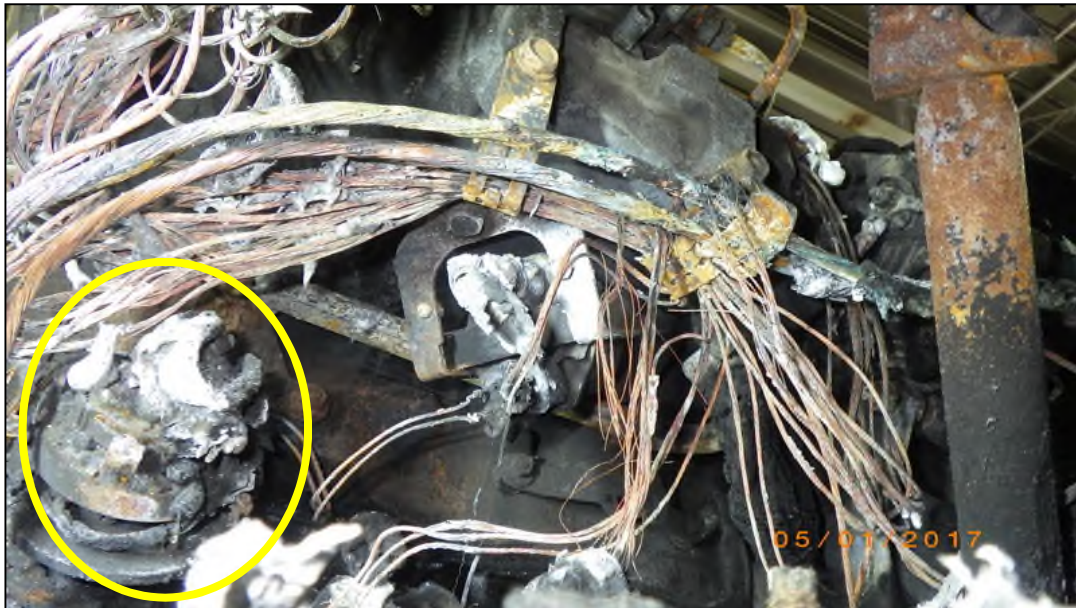
A view of the of the starter.



May 12, 2017
RCG File No. 47508870

Photograph 15

A view of the distributor.



Photograph 16

A view of the battery.



May 12, 2017
RCG File No. 47508870

CVs



**CHARLES FEELEY, I.A.A.I., C.F.E.I., C.F.I., P. I.
FIRE CONSULTANT**

Mr. Feeley had been employed by the Baltimore City Fire Department for 35 years. In this capacity he had been involved in many different emergency positions including Fire Fighter, Lieutenant, Captain, Chief Safety Officer, Battalion Commander and Division Chief.

Mr. Feeley has completed numerous educational seminars and continuing educational courses.

Mr. Feeley investigated over 550 fires in four years as an investigator and in excess of 5,000 fires as an incident commander at fire scenes. He has given expert testimony in civil and criminal court cases. He supervised the Office of the Fire Marshal in Baltimore City. He also supervised special projects such as the Arson Task Force, juvenile fire setters program, an educational intervention program and public education programs.

At Rimkus Consulting Group, Mr. Feeley has conducted over 500 fire origin and cause determinations that include, but are not limited to, assignments involving residential, commercial, industrial, passenger and commercial vehicles, marine, farm implement/equipment, appliance and electrical equipment related fires.

Mr. Feeley has been recognized for his achievements by being the recipient of awards that include Distinguished Unit Citation, Meritorious Conduct Award, Exemplary Performance, and Distinguished Service Award.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

National Fire Academy
National Nuclear Security Administration
United States Department of Justice, New Mexico Tech.
Department of Homeland Security
National Association of Fire Arson Investigators
United States Department of Justice, Anniston AL.
National Association of Fire Investigators.
Certified Fire and Explosion Investigator, N.A.F.I Certification
Certified Fire Investigator, International Association of Arson Investigators
Licensed as a Private Investigator in the State of Delaware

EMPLOYMENT HISTORY

2006 – Present	Rimkus Consulting Group, Inc.
1970 – 2006	Baltimore City Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
8200 Cameron Road, Suite C-140
Austin, TX 78754
Telephone: (512) 795-0811
Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2020

January 27, 2020

Re: RCG File No: 100022393
LLV Number: 1254489
VMF Location: 900 Blackson Avenue Austin, Texas
Subject: Preliminary/Final Report

On December 16, 2019, a fire involving USPS LLV 1254489 reportedly occurred at the USPS facility located at 2300 Scenic Drive in Georgetown, Texas. The vehicle was manufactured by General Motors in 1991 and was a Grumman model LLV-A and was identified by VIN 1GBCS10A0M2923082.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Austin VMF located at 900 Blackson Avenue in Austin, Texas. A physical inspection of the vehicle was completed on December 23, 2019. Additionally, vehicle repair and maintenance orders were also reviewed. The investigation was completed by Fire Consultant Nicholas Olson, IAAI-CFI (V). A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations" and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the operator's compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the rheostat headlamp switch positioned in the left side of the dashboard.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

No obvious fire damage was observed from the exterior of the vehicle. No other damage, aside from normal wear and tear, was observed.

Interior Inspection:

Fire damage to the interior of the vehicle was contained to the instrument cluster and dashboard. No fire extension occurred beyond the dash.

Engine Compartment Inspection:

Unremarkable with no fire damage observed. The battery was disconnected prior to our inspection. The vehicle was equipped with a 2.5 Liter engine with a standard ignition coil.

Undercarriage Inspection:

Unremarkable with no fire damage observed. The vehicle was mounted on a GM frame.

Fuse Panel Inspection:

Unremarkable with no fire damage observed. All fuses were installed and intact.

Area of Fire Origin:

Based on observable fire patterns, the fire originated in the area of the headlight switch installed in the upper left corner of the dash pod. This was the single area of fire origin identified.

Potential Contributing Factors:

The fire occurred while the operator was preparing for the day. The cargo lights were on at the time of the fire. Based on remaining physical evidence, the fire was the result of a failed headlight switch. Loss of mass and damage to the rheostat spring was observed. No physical evidence was identified to support an alternative ignition scenario.

Evidence Collected:

No evidence was collected.

Service Records:

A review of the service records revealed no recent repairs or service that would have contributed to the cause of the fire. We were not able to be determine by the service records if the headlight switch had been service or replaced.

Witness Statements:

It was stated that the carrier did their morning safety checks, checked lights, and started the vehicle. They rotated the headlight switch to have the interior lights come on to begin loading the vehicle. As the carrier was loading parcels in the back, smoke started to emerge from the dashboard and a fire started. Fire dept was called and staff on site used a fire extinguisher to put out the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Nicholas J. Olson

Nicholas J. Olson, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

January 27, 2020
Rinkus File No. 100022393

Photograph 1
Involved vehicle, LLV 1254489.



Photograph 2
Interior of involved vehicle.



Photograph 3

Dashboard was determined to be the area of fire origin. Dash replaced in original location.



Photograph 4

Remains of headlight switch.



January 27, 2020
Rimkus File No. 100022393

Curriculum Vitae



Nicholas J. Olson, CFI(V), CFEI, CVFI

Fire Consultant
Fire Division

Background

Mr. Olson is a Certified Fire Investigator (CFI) by the International Association of Arson Investigators (IAAI) and a Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators (NAFI). Additionally, he holds the Motor Vehicle Fire credential endorsement through the IAAI and is also a Certified Vehicle Fire Investigator (CVFI) through NAFI. Mr. Olson holds active certifications in Texas as a Fire Investigator, Master Peace Officer, Firefighter, Fire Inspector, and Paramedic. Mr. Olson also has an associate degree in Criminal Justice and continues his pursuit of education through extensive continuing education and professional development training.

Mr. Olson has extensive experience in both the fire service and law enforcement with 19 years of service as a public safety professional and continues to serve as a firefighter, paramedic and police officer. Mr. Olson has experience in all facets of fire and explosion investigation procedures in both the public and private sector. Through his work, he has and developed positive working relationships with numerous local, state, and federal authorities.

As a full-time fire investigator, Mr. Olson's experience includes determining the origin and cause of fires in residential and commercial structures, vehicles, watercraft, heavy equipment and wildland areas. Mr. Olson has provided testimony in both criminal courts and civil depositions. He regularly provides continuing education presentations to insurance and subrogation professionals. Mr. Olson maintains a current, working knowledge of the latest edition of National Fire Protection Association (NFPA) 921, Guide for Fire and Explosion Investigations. Additionally, he has satisfied the educational requirements for all 16 job performance requirements as set forth by the 2014 edition of NFPA 1033, Standard for Professional Qualifications for Fire Investigator.

Contact Information

(512) 795-0811
njolson@rimkus.com

8200 Cameron Rd.
Suite C-140
Austin, TX 78754



Rimkus Consulting Group, Inc.
609 South Kelly, Suite C-1
Edmond, OK 73003
(888) 611-7770 Telephone
(405) 340-8513 Facsimile
Certificate of Authorization No. 3201
Certification Expiration Date June 30, 2017

August 24, 2016

Re: RCG File No: 22804109
LLV Number: 1256411
VMF Location: 4029 W. Reno Road in Oklahoma City, Oklahoma
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was retained on July 21, 2016, to examine the vehicle fire loss involving USPS LLV 1256411 that reportedly occurred at County Road 136 and County Road 370 in Holdenville, Oklahoma on June 20, 2016. In the course of our work, we examined and documented the fire-damaged vehicle and interviewed the VMF Shop Supervisor on July 25, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 4029 W. Reno Road in Oklahoma City, Oklahoma. The work to complete this assignment was performed by Fire Consultant Christopher M. Woodall, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin within the engine compartment could not be conclusively determined due to the severity of the fire damage and the lack of remaining discernable physical evidence.

3. Physical evidence was observed during the examination that might have indicated that the LLV had struck something prior to the fire due to damage at the front left wheel and tire.
4. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of the examination due to the severity of the fire damage and the presence of multiple ignition sources that could not be eliminated.

Observations

Exterior Inspection:

Exterior examination of the vehicle revealed a large amount of fire damage to the engine compartment and hood area. Fire damage to the windshield and roof of the LLV was also observed. The remainder of the observable exterior was free of fire damage and intact.

Interior Inspection:

The interior examination of the vehicle revealed light smoke and soot staining in the cargo compartment. Fire, smoke and heat damage was found in the passenger compartment. Fire movement and intensity patterns indicated the fire progressed from the engine compartment into the passenger compartment through the bulkhead and windshield.

Engine compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment indicated the fire originated in that area. We observed significant fire damage throughout the engine compartment. We examined all fluid levels and all were within the recommended range. We examined the remaining components of the electrical system of the vehicle, and noted no adverse electrical activity or arcing. The vehicle was equipped with a GM fuel filter system.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of soot, smoke, heat, and fire damage. The involved LLV was mounted on a GM frame. We observed a compressed natural gas tank mounted inside the frame under the LLV. We were told by VMF personnel that the CNG system had been taken out of service prior to the fire, but the tank and lines were left in place.

Fuse Panel Inspection:

Examination of the fuse panel located within the operator's compartment revealed evidence of light soot, smoke, and heat damage. The fuse panel did not have a cover.

Area of Fire Origin:

The area of fire origin was determined to be in the engine compartment. Due to the severity of fire damage within the engine compartment the exact point of origin could not be conclusively determined.

Contributing Factors:

During our examination, we determined that the left-front wheel had struck something hard enough to cause significant mechanical damage to the wheel itself. It is possible that something inside the engine compartment may have been dislodged from its originally designed location during the impact and came into contact with a hot surface that could have possibly caused the fire to ignite.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interviews:

The operator of the LLV, was interviewed. He stated that the previous operator of this LLV had quit approximately a week prior to the fire. He stated that he worked an eight hour shift and that because they were shorthanded he was going to have to drive another three hour route that evening. He said that he had not been having any problems with the LLV at all. He said that after he had started the 3 hour route, he turned onto County Road 370 he struck something that was in the road with the left front tire. He said that the impact caused the tire to come off of the wheel. He said that he did not see anything in the roadway that he may of hit. He then called his supervisor and informed him of the flat. He locked up the LLV and left to go get a spare. When he returned, approximately thirty minutes later, the Holdenville Fire Department was there putting the fire out.

The Holdenville Fire Department responded to and extinguished the fire.

Service Records:

A review of the service records for the involved LLV did not indicate any recent repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Christopher M. Woodall

Christopher M. Woodall, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 24, 2016
RCG File No. 22804109

Photograph 1

View of the LLV from the front left.



Photograph 2

View of the engine compartment.



Photograph 4

View of the passenger compartment of the LLV.



Photograph 3

View of the damaged front left tire and wheel.



August 24, 2016
RCG File No. 22804109

CVs



CHRISTOPHER M. WOODALL, IAAI-CFI FIRE CONSULTANT

Mr. Woodall has over 12 years of experience in the fire service including field assignments in both small and large scale fire property losses, fire death and injury cases, arson for fraud investigations, and training & development solutions. Specific area of expertise is in determining the origin, cause and responsibility of fire and explosion losses. These assignments involve residential, commercial, industrial, vehicle, marine vessels, farm implement, heavy equipment, chemical, manufacturing, product liability and injury/death related fires and explosions. Mr. Woodall has extensive training in fire and criminal investigations, as well as response to hazardous material, chemical, and biological and EMS incidents. He is certified through the International Association of Arson Investigators as a Certified Fire Investigator (IAAI-CFI).

Consulting expertise includes evaluation of litigation related matters involving the case areas described above as well as explosions involving LPG, natural gas, fire code and standards compliance, fire detection and response systems, and investigation of fraud related fire incidents.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Western Oklahoma State College

- Fire Science 60 Hours

Oklahoma Chapter of the International Association of Special Investigation Units

- Member 2015 – Present

Oklahoma Chapter of the International Association of Arson Investigators

- Board Member 2014 – Present
- Member 2010 – Present

International Association of Arson Investigators

- Member 2010 – Present

International Association of Fire Fighters

- Member 2003 – 2015

National Fire Protection Association

- Member 2012 – Present

Fire Marshal's Association of Oklahoma

- Member 2010 – 2015

EMPLOYMENT HISTORY

2015 – Present

Rimkus Consulting Group, Inc.

2015 – Present

Fletcher Police Department

2011 – Present

Oklahoma State University

2003 – 2015

Lawton Fire Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
13900 Alton Pkwy., Suite 123
Irvine, CA 92618
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

January 11, 2017

Re: RCG File No:

LLV Number: 71805291
Exam Location: 1256968
Subject: 13949 Poway Road in Poway, California
Preliminary/Final Report

Dear

On November 30, 2016, a fire occurred involving USPS LLV 1256968. The loss location was reported as 8552 Ridgefield Place in San Diego, California. LLV 1256968 was examined at the Pacific Auto Electric facility at 13949 Poway Road in Poway, California.

Rimkus Consulting Group, Inc. was retained to examine LLV 1256968, VIN 1GBCS10A0M2925723, to determine the cause of the fire. In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on December 14, 2016. During our investigation, we conducted an examination of the fire damaged LLV, conducted interviews with carrier/driver Mr. and Post Office Supervisor Mr. , and documented the vehicle with photographs. This report was reviewed by Jack R. Kennedy III, Technical Fire Manager.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was on the operator side around the battery and electrical connections.
3. The specific ignition sequence and cause of the fire was a direct result of the oil cooler fan relay conductor plastic wire insulation abraded over time due to contact with a steel-braid reinforced rubber (neoprene) oil line, and allowed a non-fused ground fault to occur at the point of contact with the hot (positive) lead conductor and grounded oil line. Heat generated by the ground fault caused ignition of the plastic wire insulation. Fire spread to adjacent wire/conductor plastic insulation, battery, and plastic brake fluid reservoir.

Observations

Exterior Inspection:

The exterior of the vehicle showed no fire damage except where the engine compartment hood and fender join on the right side, where heat and smoke discoloration to the vehicle paint was observed.

Interior Inspection:

There was no fire damage to the vehicle interior sections.

Engine Compartment Inspection:

Fire damaged wire battery leads, related conductors, and battery were removed from the engine compartment prior to our examination and replacement parts were partially installed.

Residual fire and heat effects were observed near the battery location at the right front quarter panel where soot and heat discoloration remained. A corresponding heat pattern was observed on the hood, right side. Soot and heat effects rapidly diminished away from this area in the engine compartment, leaving the engine and other combustible components intact.

We examined the removed and fire damaged components and observed the hot (positive) conductor, which originated at the alternator and terminated at the oil cooler fan relay, which had sustained electrical arcing and was severed into two sections. The electrical event occurred between the alternator post and the in-line 15 amp fuse (removed and re-used in the new replacement conductor). The conductor was directly connected to a second hot (positive) wire conductor which was connected directly to the battery, indication the electrically arced wire conductor was not fuse protected at the location of the electrical event.

We examined the removed steel-braid reinforced rubber (neoprene) oil line and observed evidence of melting/beading of the steel reinforcement braiding. Based on the proximity of the above noted arced conductor and the apparent electrical activity to the steel braiding, these events occurred in unison.

Undercarriage Inspection:

We observed no fire damage to the undercarriage except minor fall-down from burning plastic immediately below the battery location.

Fuse Panel Inspection:

All fuses were intact.

Area of Fire Origin:

The fire originated in the engine compartment, right side near the battery location.

Contributing Factors:

The oil cooler fan relay conductor plastic wire insulation abraded over time due to contact with a steel-braid reinforced rubber (neoprene) oil line, and allowed a non-fused ground fault to occur at the point of contact with the hot (positive) lead conductor and grounded oil line. Heat generated by the ground fault caused ignition of the plastic wire insulation. Fire spread to the adjacent wire/conductor plastic insulation, battery, and plastic brake fluid reservoir.

Evidence Collected:

No evidence was collected. All components were left in the possession of Pacific Auto Electric.

Interviews:

USPS VMF Manger, provided the following information:

- He received an email which indicated the fire investigation had been completed. They sent the vehicle over to Pacific Auto Electric for repairs to be made.
- He subsequently called Pacific Auto Electric and instructed them to halt repairs and retain damaged parts.

Post Office Supervisor, provided the following information:

- He responded to the fire location when he was called by carrier.

- It took him about ten minutes to get to the fire location with a replacement LLV, and upon arrival he found Mr. had removed postal contents from the smoking LLV
- There was only smoke visible when he arrived.
- He popped the hood and was going to open it, but he then saw that heat and smoke was coming from the area of the hood latch, so he did not open the hood.
- The only flames he saw was when burning plastic dripped to the ground.
- The fire department arrived quickly and put out the fire.

The carrier/driver, provided the following information:

- He had been with the USPS since January 2016.
- The day of the fire, he was driving the subject LLV from about 6:00 A.M. until the fire occurred.
- The LLV ran fine all day, there was no indication from any of the gauges there was a problem.
- He was in the process of making a parcel run at about 4:40 p.m. when he smelled smoke, at which time he immediately pulled over and turned the engine off.
- After he was stopped he saw greyish white smoke coming from under the engine compartment hood on the right side, where it met the right fender.
- He called his Supervisor who responded with a replacement LLV.
- He was able to get all of the mail and packages out of the vehicle.
- He did not try to open the hood or fight the fire, but Mr. tried unsuccessfully to open the hood.
- He transferred the mail and packages into the replacement LLV and continued his route while Marlon stayed with the smoking LLV.

Service Records:

A review of the service records for the involved LLV was conducted and did not indicate any recent repairs or service that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

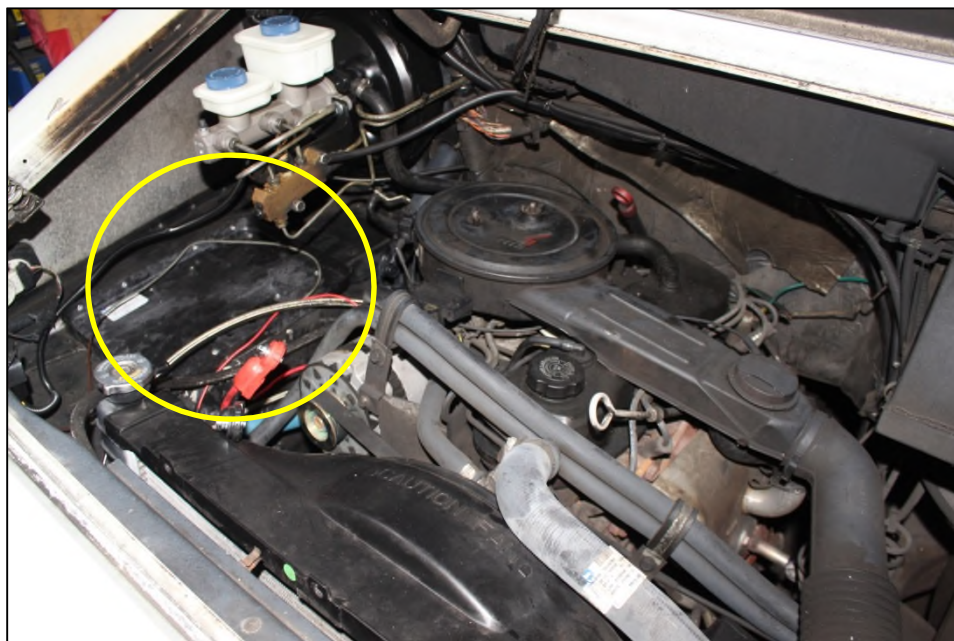
Attachments: Photographs, CVs

January 11, 2017
RCG File No. 71805291

Photograph 1
Subject LLV 1256968.



Photograph 2
Engine compartment. Replacement parts partially installed. Origin area, yellow circle.



Photograph 3

Electrically severed conductor and oil line. In-line fuse holder, left.



Photograph 4

Severed conductor repositioned at origin area.



January 11, 2017
RCG File No. 71805291

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
9125 Guilford Road, Suite 108
Columbia, Maryland 21046
(877) 872-2999 Telephone
(410) 872-9111 Facsimile

March 15, 2018

Re: RCG File No: 47509562
LLV Number: 1256995
VMF Location: 9111 Edgeworth Drive Capitol Heights, Maryland
Subject: Preliminary/Final Report

Dear

On February 13, 2018, a fire occurred in a US Postal Service vehicle at 28948 Three Notch Road in Mechanicsville, Maryland. On March 2, 2018, Rimkus Consulting Group, Inc. was retained to examine the 1991 Chevrolet LLV 1256995 with a vehicle identification number (VIN) of 1GBCS10A3M2925683. On March 5, 2018, we conducted a fire origin and cause examination on the vehicle at US Postal Service Maintenance Facility located at 9111 Edgeworth Drive in Capitol Heights, Maryland.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Charles W. Feeley, IAAI-CFI (V). A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment in the area of the bulkhead on the left side of the vehicle.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a vapor ignition that had dislodged the air breather cover as a cause of the fire. A brake fluid leak due to mechanical damage may have contributed to the extent of the damage.

Observations

Exterior Inspection:

During the course of our site visit, we observed the following on the exterior of the vehicle traveling in a counter clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. The exterior front of the vehicle sustained fire, heat, and smoke damage. The front panel sustained fire and heat damage to the left side, left corner of the bumper cover and headlight assembly. The hood, front support posts and front windshield were no longer in place. The hood had been removed prior to our inspection.

The exterior left side sustained fire and heat damage from the front bumper to the sliding door. The sliding door and rear panel sustained fire, heat and smoke damage to the upper portion. The front fender had been consumed above the engine and the front portion of the left wheel and tire. The exterior rear sustained smoke damage to roll up door and bulkhead. The exterior right side sustained fire, heat and smoke damage to the upper portion of the rear side panel and to the driver door. The front fender had sustained the most severe damage above the right front wheel and tire. The roof had been consumed above the driver's compartment. It was intact above the cargo area.

Interior Inspection:

The cargo area sustained smoke damage throughout. The left side panel sustained the most severe damage. The driver's compartment sustained fire and heat damage throughout. The combustible material of the driver's seat had been consumed. The

top portion of the mail rack along the left side had been consumed. The steering column had collapsed. The front bulkhead had been consumed. The fuse block located on the right side of the driver's compartment had fallen into the engine compartment and was too severely damaged by the fire to be evaluated. The ignition was too severely damaged to be evaluated. The headlight switch had fallen to the floor. It displayed no evidence of adverse electrical activity. Two conductors within the dashboard wiring harness displayed beading. The heater fan and ventilation fan sustained fire and heat damage and had become dislodged. An aftermarket radio sustained fire and heat damage and had become dislodged.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. The vehicle was equipped with a GM 2.5L, four-cylinder gasoline engine. The engine compartment sustained severe fire, heat, and smoke damage throughout. The damage was most severe on the left side of the engine compartment. The power steering unit sustained fire damage. The reservoir had been consumed. The upper portion of the flexible return line and reservoir had been consumed. The upper radiator hose on the left side of the engine compartment had been consumed.

The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been consumed. The melted remains of the fuse box from the driver's compartment and the attached wiring harness were inspected. The wiring harness sustained fire and heat damage. The insulation had been consumed. Beading on two conductors within the wiring harness was observed. The alternator sustained severe fire and heat damage. The insulation had been consumed from the conductors to the alternator. The main conductor was secure with no evidence of adverse electrical activity. The auxiliary conductor was secure.

The top and side nearest to the engine of the battery case had been consumed. The conductors had become detached from the side terminals. The negative conductor was attached to the frame and to the block. The main positive conductor was attached to the starter. The insulation had been consumed but displayed no evidence of adverse electrical activity. The radiator was intact except at the top right corner. The air breather was in place but the air filter had been consumed. The distributor sustained fire and heat damage.

The brake lines positioned on the left side of the engine sustained fire and heat damage. One brake line had been severed below the coiled area. There was charred residue inside of the tubing. The lower portion of the brake line displayed more severe damage at the break. The exhaust manifold displayed severe heat damage. The fuel filter sustained heat damage but was intact.

Undercarriage Inspection:

Examination of the rear undercarriage revealed no evidence of soot, smoke, heat or fire damage. The involved LLV was mounted on a GM frame. The vehicle was equipped with a GM fuel filter system. There was no damage to the undercarriage of the vehicle beneath the cargo area. The exhaust system was undamaged. The rear tire, wheels, brake lines and brakes were undamaged by the fire. The rear axle was not leaking or damaged. The fuel tank was undamaged by the fire. The fuel lines were intact along the left open portion of the box frame routed to the front of the vehicle.

The undercarriage and frame in the area of the engine sustained fire and heat damage at the left side of the engine. The left front tire and brake lines sustained fire and heat damaged. The fuel lines were intact inside of the box type frame in the engine compartment. The rubber flex section routed to the charcoal canister had been consumed. The high pressure connection to the fuel rail positioned on the right side of the engine was secure. The return line was secure. The transmission sustained heat damage to the top surface beneath the engine compartment. The oil pan displayed no evidence of an oil leak. There was an accumulation of oil on the cross member of the frame.

Fuse Panel Inspection:

The fuse panel of the driver's compartment which had fallen into the engine compartment was observed with severe fire damage. Examination of the fuse panel revealed severe fire damage and mass loss to the panel and all of the fuses, due to the severe fire damage and mass loss we were not able to determine if any fuses were open or blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated within the engine

compartment of the vehicle. The area of origin was determined to be on the left side of the engine compartment. A more specific area of origin could not be determined due to the severe damage and lack of remaining physical evidence. The specific point of origin could not be conclusively identified due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination

Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination. The possibility of a brake fluid leak due to mechanical damage may have contributed to the damage. A vapor ignition had dislodged the air breather cover prior to the fire and it was positioned in the left side of the engine compartment during a prior inspection.

Evidence Collected:

There was no physical evidence collected for laboratory analysis

Service Records:

A review of the provided service records for the involved LLV was conducted. There were indications of recent service or repairs that may have caused or contributed to the cause of the fire. A new engine was installed in the vehicle in September 2017 by Gearhead. The day prior to the fire, it was reported that the vehicle had been running rough, followed by a no start. H&H Towing was called to tow the vehicle to the VMF. Gearhead was requested to check the vehicle. When he examined the vehicle, he popped the hood and checked the oil. He found metal flakes in the oil. He noticed that the air cleaner lid had blown off due to what he described as a backfire and was lodged on the left side of the engine. The threads had been stripped on the bolt and the wing nut was not present. He noticed that the number four spark plug had antifreeze around it. He removed the spark plug and performed a compression test. He bumped the distributor to conduct the compression test. The compression was zero. Antifreeze was the only fluid leaking at that time. The last preventative maintenance was reported to be February 24, 2018.

Interview:

Mr. of H&H Towing was interviewed on March 5, 2018, and provided the following information:

- He was called to the Mechanicsville Post Office to pick up the vehicle for delivery to Capitol Heights.
- He had no information regarding previous problems except that it would not start.
- He turned the key to allow him to place the vehicle in neutral so he could load it.
- He heard a crackling sound and smelled something.
- He walked to the front of the vehicle and saw smoke coming from the grill.
- He looked underneath and saw fire dripping onto the ground in the center slightly to the left.
- He ran and got a portable fire extinguisher but the fire was too big when he returned.
- He turned the key off and called to have someone call 911.

Mr. of Gearhead was interviewed on March 7, 2018, and provided the following information:

- He inspected the vehicle on the day prior to the fire.
- He had received a call reporting that the vehicle had been running rough, followed by a no start.
- He followed his standard procedure.
- He popped the hood and checked the oil.
- He found metal flakes in the oil.
- He noticed that the air cleaner lid had blown off due to a backfire and was lodged on the left side of the engine.
- The threads had been stripped on the bolt and the wing nut was not present.
- He noticed that the number four spark plug had antifreeze around it.
- He removed the spark plug and performed a compression test.
- He bumped the distributor to conduct the compression test.
- The compression was zero.
- Antifreeze was the only fluid leaking.
- The engine had just been replaced in the vehicle in September, 2017.
- He stated that this is not the first occasion when a new engine had failed.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles W. Feeley

Charles W. Feeley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

March 15, 2018
RCG File No. 47509562

Photograph 1

A view of the exterior front of the vehicle.



Photograph 2

A view of the exterior left side of the vehicle.



March 15, 2018
RCG File No. 47509562

Photograph 3

A view of the exterior rear of the vehicle.



Photograph 4

A view of the exterior right side of the vehicle.



March 15, 2018
RCG File No. 47509562

Photograph 5

A view of the interior cargo area.



Photograph 6

A view of the interior driver's compartment.



March 15, 2018
RCG File No. 47509562

Photograph 7

A view of the engine compartment.



Photograph 8

A view of the wiring harness.



March 15, 2018
RCG File No. 47509562

Photograph 9

A view of the air filter area.



Photograph 10

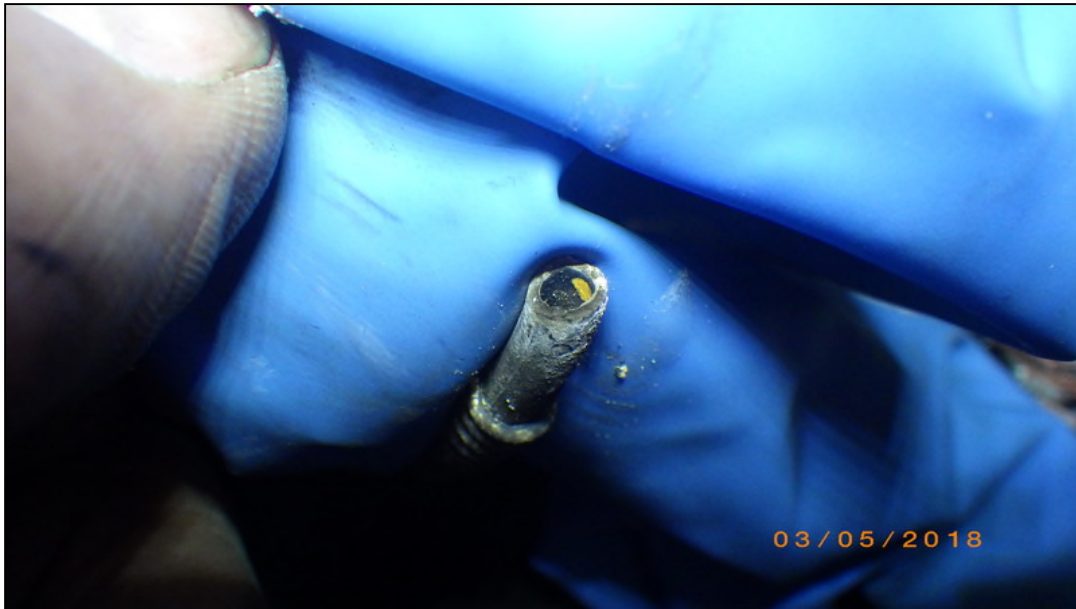
A view of the inside of the air filter area.



March 15, 2018
RCG File No. 47509562

Photograph 11

A view of the brake line tubing.



Photograph 11

A view of the severed brake line.



March 15, 2018
RCG File No. 47509562

CVs



**CHARLES FEELEY, I.A.A.I., C.F.E.I., C.F.I., P. I.
FIRE CONSULTANT**

Mr. Feeley had been employed by the Baltimore City Fire Department for 35 years. In this capacity he had been involved in many different emergency positions including Fire Fighter, Lieutenant, Captain, Chief Safety Officer, Battalion Commander and Division Chief.

Mr. Feeley has completed numerous educational seminars and continuing educational courses.

Mr. Feeley investigated over 550 fires in four years as an investigator and in excess of 5,000 fires as an incident commander at fire scenes. He has given expert testimony in civil and criminal court cases. He supervised the Office of the Fire Marshal in Baltimore City. He also supervised special projects such as the Arson Task Force, juvenile fire setters program, an educational intervention program and public education programs.

At Rimkus Consulting Group, Mr. Feeley has conducted over 500 fire origin and cause determinations that include, but are not limited to, assignments involving residential, commercial, industrial, passenger and commercial vehicles, marine, farm implement/equipment, appliance and electrical equipment related fires.

Mr. Feeley has been recognized for his achievements by being the recipient of awards that include Distinguished Unit Citation, Meritorious Conduct Award, Exemplary Performance, and Distinguished Service Award.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

National Fire Academy
National Nuclear Security Administration
United States Department of Justice, New Mexico Tech.
Department of Homeland Security
National Association of Fire Arson Investigators
United States Department of Justice, Anniston AL.
National Association of Fire Investigators.
Certified Fire and Explosion Investigator, N.A.F.I Certification
Certified Fire Investigator, International Association of Arson Investigators
Licensed as a Private Investigator in the State of Delaware

EMPLOYMENT HISTORY

2006 – Present	Rimkus Consulting Group, Inc.
1970 – 2006	Baltimore City Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2677 North Main Street., Suite 300
Santa Ana, CA 92705
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

December 8, 2015

Re: RCG File No: 71804303
USPS LLV Number: 1257463
Exam Location: 28201 Franklin Parkway, Santa Clarita, California
Subject: Final Report

On October 3, 2015, a fire occurred involving USPS LLV 1257463, VIN 1GBCS10A1M2926122. The loss location was reported as "south bound side of the 14 freeway" near Newhall, California. LLV 1257463 was examined at the VMF located at 28201 Franklin Parkway in Santa Clarita, California.

Rimkus Consulting Group, Inc. was retained to examine LLV 1257463 to determine the cause of the fire. This file was reviewed and finalized by Jack R. Kennedy, III, IAAI-CFI, Eastern Region Fire Manager.

In the course of our work, the scene examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on October 9, 2015. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver, and documented the vehicle with photographs.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. After a thorough examination of the involved LLV, it was determined that the vehicle sustained severe fire damage which rendered the vehicle inoperable.
2. The fire was determined to have originated in the engine compartment, more specifically, on the left side of the engine compartment in and around the area where the rubber fuel lines were routed.
3. The specific ignition sequence and cause of the fire was the direct result of the rubber fuel lines degrading and failing due to heat exposure from the operating exhaust system which was within 2 inches of the location where the lines are routed. The rubber lines failed releasing gasoline onto the hot surface of the exhaust system where the vapors were subsequently ignited and spread throughout the engine compartment.

Observations

Exterior Inspection:

Engine and driver compartment sustained severe fire damage. The structural area of the LLV surrounding the engine compartment had been consumed by fire. Fire effects diminished to the rear of the driver compartment, leaving the cargo area intact but smoke damaged. Other than heat effects to the front adjoining cargo compartment enclosure, there was no exterior fire damage to the rear of the driver compartment.

The front grill, bumper, and fenders were severely fire damaged. The left side sustained melting of the entire aluminum right fender. Heat effects lessened slightly to the right side, leaving partial fender sections in place. All window glass had been broken and melted during the fire and was not in place. The operator door and rear door cylinder locks remained in place.

The rear tires were intact and unburned. The right front tire was fire damaged, with approximately 50 percent of the tire remaining. The left front tire was fire damaged, with approximately 10 percent of the tire remaining. Damage to the left front tire was consistent with the severe damage/melting of the left front fender.

Interior Inspection:

The interior of the driver compartment was severely damaged by fire and all combustible components were consumed. Electrical conductors, wiring harness, and electrical components indicated exposure damage from fire entering via the engine compartment firewall/bulkhead. No evidence of adverse electrical activity was observed. Nearly all combustible wire insulation and related combustible components had been

consumed by fire. Fire damage in the operator compartment was determined to be a result of fire extension into this area through manufactured openings in the fire wall between this area and the engine compartment.

The cargo area interior remained intact but sustained fire and heat damage at the front where common to the driver compartment. Flame and heat entered the doorway leaving distinct heat patterns at the doorway and wall. Damage diminished significantly to the rear where primarily smoke damage occurred.

Engine Compartment Inspection:

The engine compartment was severely damaged by fire and all combustible contents were consumed or severely charred.

Significant heat effects were noted to the left side of the engine compartment where the electrical wiring harness conductors were brittle and the insulation had been consumed by fire. Heat and fire effects diminished slightly to the right side of the engine compartment where charred plastic insulation and components were more abundant.

Engine oil and transmission levels were examined and were found to be full within normal operating ranges. The radiator and hoses sustained fire damage which allowed coolant to drain.

Examination of the left side of the engine compartment indicated the metal fuel supply and return lines entered the engine compartment along the left frame rail and transitioned to what appeared to be neoprene rubber remains. The rubber fuel lines passed near the engine exhaust header, flange, and pipe where the fuel filter was located at the left rear portion of the engine.

Close examination of the fuel line path, as determined by the location and position of the remaining metal fuel line components, indicated the rubber lines passed within 2 inches of the exhaust header/flange.

Undercarriage Inspection:

The LLV was mounted on a GM frame. There was no indication of impact damage to the frame or undercarriage components.

The undercarriage sustained no fire damage below the cargo compartment, however heavy soot appeared on all undercarriage components in this area. The fuel tank was intact and unburned. The gas cap and filler tube were also intact. Fuel lines were intact at the tank and where traversing forward in the frame.

The undercarriage sustained fire effects under the driver compartment and increased in severity forward toward the engine compartment. The metal fuel lines sustained heat

and fire damage where the lines entered the engine compartment at the left front. Neoprene rubber sections were consumed by fire within the engine compartment area. The fuel filter was located at the left rear section of the engine, and steel fuel lines remained connected thereto. The LLV was equipped with a GM fuel filter system.

The open frame rail had fuel lines attached to the inboard side of the left rail.

Fuse Panel Inspection:

The fuse panel was contained inside the driver compartment, right side at the bulkhead location in front of the driver's seat. The fuse panel was severely damaged and consumed by fire and analysis of the panel/fuses could not be performed.

Area of Fire Origin:

The fire originated in the engine compartment, left side; at the rubber fuel lines where they transition to steel lines below the fuel filter location at the left rear section of the engine.

Contributing Factors:

Examination indicated the rubber fuel lines were in close proximity to the engine exhaust system. The carrier/driver operating the vehicle detected the odor of gasoline prior to the fire and reported a stalling of the engine operation. These factors indicate a rubber fuel line most likely failed due to exhaust system heat exposure, resulting in a gasoline leak at the rubber fuel line.

Evidence Collected:

There was no evidence collected for laboratory analysis.

Interview:

Carrier, USPS, provided the following information:

- He had completed his delivery route and was heading back to the USPS facility after filling the gas tank when the fire occurred.
- The weather was warm and clear (Weather Underground: 82f).
- He had been operating the vehicle for approximately 5 to 6 hours during his route.
- While driving back to the USPS facility he detected an odor of gasoline and the odor got worse as he was driving.

- The odor was so bad he moved into the slow lane of the freeway, and then the engine died.
- He pulled onto the shoulder and noticed smoke. He got out of the vehicle and looked underneath where he saw "fire dripping down" to the ground under the engine compartment.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Eastern Region Fire Manager

Attachments: Photographs, CVs

December 8, 2015
RCG File No. 01311041

Photograph 1
Subject LLV, left side.



Photograph 2
View of engine compartment, front of LLV at top of photo. Origin area, yellow circle.



December 8, 2015
RCG File No. 01311041

Photograph 3

Origin area. Fuel filter (top center) with rigid lines attached. Exhaust pipe (lower left).



Photograph 4

Location of fuel lines (top and center) in relation to exhaust system (lower left).



December 8, 2015
RCG File No. 01311041

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
92 South Street
Hopkinton, MA 01748
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

October 14, 2016

Re: RCG File No: 44802883
LLV Number: 1258124
VMF Location: 85 Weston Street in Hartford, Connecticut
Subject: Preliminary/Final Report

On August 1, 2016, a fire occurred involving LLV 1258124, VIN 1GBCS10A8M2926912 owned and operated by the USPS. The vehicle was located and inspected at the VMF location at 85 Weston Street in Hartford, Connecticut. Rimkus Consulting Group, Inc. was retained to determine the origin and cause of the fire. Our inspection of the vehicle occurred on August 31, 2016.

In the course of our work, we inspected and photographed the vehicle, reviewed the work order history, and interviewed the carrier. Our work to complete this assignment was conducted by Scott S Popovich, CFEI, Fire Consultant. This report was technically review by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended by the current edition of National Fire Protection Association's N.F.P.A. 921 – "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was within the engine compartment at and around the starter negative conductor positioned in the area of fire origin.

3. The specific ignition sequence and cause of the fire was determined to be the result of a probable short to ground at the starter or failure in the insulation on the negative conductor to the starter.

Observations

Exterior Inspection:

The examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left refers to the passenger side. We observed movement and intensity fire patterns on the front of the vehicle indicating a fire originating in the engine compartment. The windshield was mostly broken out and in pieces on the interior floor due to thermal conditions. The window glasses in the small triangular windows near the windshield were thermally damaged but intact. A movement and intensity fire pattern was observed on the fender below the "A" post on the driver's side. A hole in the hood of the vehicle due to thermal conditions was present on the passenger's side. The glass in the driver's side sliding door was intact and free of damage indicating it was in the open position during the fire. The passenger side sliding door window was broken mechanically possibly by the fire department during extinguishment. The rear slide up cargo door was not damaged indicating it was in the closed position during the fire. The LLV number was verified from markings by the rear cargo door. Movement and intensity fire patterns on the outside of the vehicle indicated a fire originating at the engine compartment of the vehicle and moving to the interior. The front driver's side tire was deflated due to thermal conditions and the other three tires were intact and inflated.

Interior Inspection:

The interior was inspected. The inspection began through the driver's door of the vehicle in the passenger compartment because the rear door was locked and in the closed position. Heat, smoke and soot damage was observed in the cargo area. We did not observe any items of evidentiary value in the cargo compartment. Movement and intensity fire patterns on both side walls indicated a fire progressing from the front of the vehicle to the rear. The plastic items within the cargo area were melted due to thermal conditions. The data plate was observed on the cargo wall of the vehicle. The driver's seat cushion covering was melted but the foam material was mostly intact. The debris in the interior was systematically delayered and we did not observe any material with evidentiary value in the debris. The electrical conductors were examined in the interior. We did not observe any evidence of adverse electrical activity or anomalies in the conductors. The key was in the ignition. The most severe damage was observed to the fire wall below the steering wheel. Movement and intensity fire patterns indicated that the fire originated in the engine compartment and moved to the interior of the vehicle.

Engine Compartment Inspection:

The engine compartment was examined from above. We observed movement and intensity fire patterns indicating fire movement from the firewall on the driver's side moving towards the front of the vehicle. The battery had mass loss and severe melting on the negative side. The negative cable from the starter showed severe adverse electrical activity just before the starter. The associated electrical conductors in the area were absent of insulation and found to be fire damaged. Melting on the hoses and plastics indicated that the fire originated in the engine compartment towards the fire wall. The soft metal of the radiator was undamaged by the thermal conditions indicating the fire started towards the fire wall. The fuel line by the exhaust manifold on the passenger's side of the vehicle was burned through and most likely caused the hole in the engine hood directly above.

Undercarriage Inspection:

The undercarriage was examined. The involved LLV was mounted on a GM frame. The frame rail components were undamaged. The associated fuel lines and filter system were intact and free of damage. The undercarriage was eliminated as the origin of the fire. Damage to the starter negative conductor could be observed from underneath the engine compartment.

Fuse Panel Inspection:

The fuse panel was severely melted by the fire and did not contain any useable evidence. There were no signs of adverse electrical activity on the conductors still attached to the fuse panel.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence and an eye witness that the fire originated in the engine compartment of the vehicle. The specific area of origin was the starter negative cable on the driver's side of the engine.

Contributing Factors:

During our examination, we determined that the most probable cause of the negative cable failure was a short to ground at the starter or failure in the insulation. Reportedly, the starter was replaced on July 29, 2015.

The first fuel ignited was most probably the protective wire lumen.

Evidence Collected:

No evidence was collected.

Interview:

On September 8, 2016 a telephone interview was conducted with the carrier/driver of the vehicle. He reported the following information:

- He had just parked in front of the business on Buckland Hills Drive in Manchester, Connecticut.
- A lot of smoke started to come from the hood area.
- Smoke started to come into the passenger compartment by the two corners of the dash.
- He exited the vehicle and called 9-1-1.
- He saw flames dripping from the driver's side of the engine compartment.
- The vehicle had been operating for 1.5 to 2 hours.
- This was his regular route that he had been on for the last 20 years.
- He had no previous problems with the vehicle.
- He noticed before exiting the vehicle that the temperature gauge had not risen.
- The vehicle was not making any noises prior to the event and had nothing else to report he thought we should know about.
- No pictures of the fire were available, that he knew of.

Service Records:

A review of the service history for the involved LLV was conducted. There were no recent repairs or major service that would have caused or contributed to the cause of the fire from the provided records for review. The LLV starter was replaced in July of 2015, with no found reported issues or repairs since the install.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Scott S. Popovich

Scott S. Popovich, CFEI, CFPS
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Eastern Region Fire Manager

Attachments: Photographs, CVs

October 14, 2016
RCG File No. 44802883

Photograph 1

Front and driver's side of LLV.



Photograph 2

Passengers side of LLV.

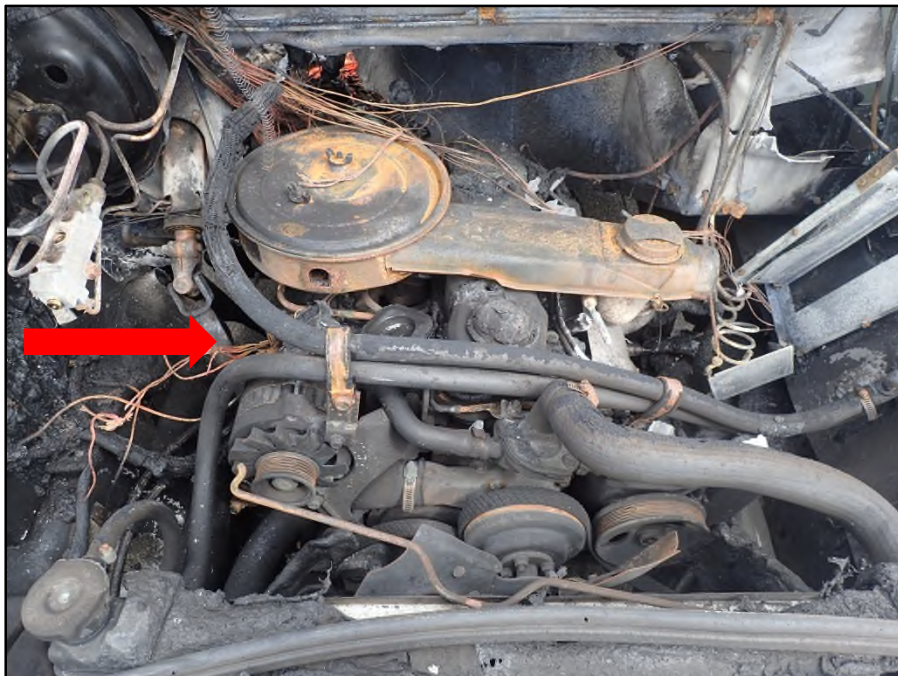


October 14, 2016
RCG File No. 44802883

Photograph 3
Interior of LLV.

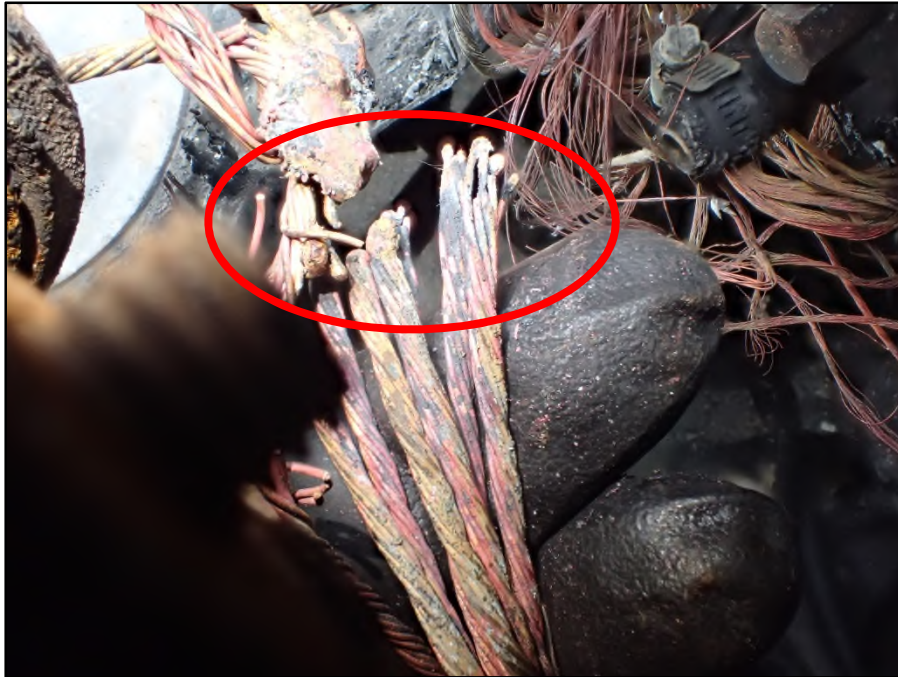


Photograph 4
Engine compartment of LLV and origin of the fire.



Photograph 5

Adverse electrical activity on cable from starter .



Photograph 4

Close up of adverse electrical activity on conductor.



October 14, 2016
RCG File No. 44802883

CVs



SCOTT S. POPOVICH, CFPS, CFEI, CVFI, FIT FIRE CONSULTANT

Mr. Popovich's professional career includes 25 years with the Woonsocket Fire Department in the city of Woonsocket, RI. In that capacity he has been involved in many different emergency services including Deputy Director of Emergency Management, Assistant Fire Marshal, Lieutenant and Firefighter. As a licensed state of Rhode Island Assistant Deputy State Fire Marshal his duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Popovich has a Master of Science in Fire and Arson Investigation from the University of New Haven with a heavy concentration in forensics and a Bachelor of Science in Public Administration from Roger Williams University. He maintains certifications as a fire investigator and fire inspector and has attended numerous classes at the National Fire Academy and the Rhode Island State Crime Laboratory.

Mr. Popovich was recently recognized for project development for the planning and execution of Emergency Response Training for CVS Corporate Headquarters in Woonsocket, Rhode Island.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

M.S. – Fire and Arson Investigation – University of New Haven, Connecticut
B.S. – Public Administration – Roger Williams University, Rhode Island
A.S. – Fire Science – Community College of Rhode Island

Licenses and Certifications

Fire Investigative Technician (FIT) by the International Association of Arson Investigators
Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) by the National Association of Fire Investigators
Certified Fire Protection Specialist (CFPS) by the National Fire Protection Association
Certified Fire Inspector (CFI) by the National Fire Protection Association
Certified Evidence Collection Technician (ECT) by the International Association of Arson Investigators
Licensed Emergency Medical Technician by the State of Rhode Island
Licensed Oil Heat Technician
Licensed Hoisting Equipment Operator by the State of Rhode Island
Licensed Private Detective in the State of Rhode Island

Professional Memberships

IAAI (International Association of Arson Investigators)
RIIAAI (Rhode Island Chapter of International Association of Arson Investigators) Board Member



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
9125 Guilford Road, Suite 108
Columbia, Maryland 21046
Telephone: (877) 872-2999

July 18, 2019

Re: RCG File No: 100006375
LLV Number: 1258384
VMF Location: 4200 Ashland Avenue Baltimore, Maryland
Subject: Preliminary/Final Report

Dear

On June 18, 2019, a fire occurred in a US Postal Service vehicle at 279 Jenny Drive in Westminster, Maryland. June 20, 2019, Rimkus Consulting Group, Inc. was retained to examine the 1991 LLV 1258384 with a vehicle identification number (VIN) of 1GBCS10A2M2927148. On June 21, 2019, we conducted a fire origin and cause examination on the vehicle at US Postal Service Maintenance Facility located at 4200 Ashland Avenue in Baltimore, Maryland.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Charles W. Feeley, IAAI-CFI (V). A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The vehicle sustained moderate fire damage to the interior compartment from a fire originating within the dashboard area.

2. Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the interior compartment of the vehicle. The area of origin was determined to be on the right driver's side of the dashboard. The specific area of origin was the fuse block connector.
3. The specific ignition sequence and cause of the fire could not be conclusively determined without a more intrusive inspection of the connector block of the fuse panel. The most probable cause of the fire was a high resistance connection.

Observations

Exterior Inspection:

The exterior examination of the vehicle began at the front exterior and continued in a counter-clockwise direction. The exterior of the vehicle was unremarkable and we did not observe any fire or smoke damage.

Interior Inspection:

The rear cargo area sustained smoke damage throughout. The left mail side of the vehicle sustained smoke damage throughout. The right driver's side of the passenger compartment sustained fire and heat damage to the dashboard. The damage extended from within the dashboard. The right side of the dashboard had melted in the area of the emergency flasher and cargo light switches. The interior side of the dashboard sustained heat damage in the area of the gauges. The wiring harness had been removed prior to the inspection. The conductors to the switches had been severed for removal. There was no evidence of adverse electrical activity at the severed ends. The vent was no longer in place. A new wiring harness had been installed. The headlight switch was undamaged by the fire. The indicator light was undamaged by the fire.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L, four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a direct ignition system. The engine compartment sustained minor fire damage. The engine compartment sustained heat and smoke damage in the right corner at the bulkhead. The connector block for the fuse block had sustained fire, heat and smoke damage.

Undercarriage Inspection:

The undercarriage of the vehicle in the area of the engine sustained no fire, heat or smoke damage. The exhaust system was undamaged by the fire. The front and rear wheels, brakes, brake lines and tires had sustained no fire, heat or smoke damage.

The rear axle was not leaking or damaged. The transmission was undamaged. The transmission cooling lines were intact. The fuel lines were intact.

Fuse Panel Inspection:

Several fuses sustained heat damage above the 15 Ampere fuse labeled Turn B/U. An additional conductor had been inserted into the receiver for the Turn B/U fuse. The Turn B/U fuse sustained heat damage. The fuse box connector block sustained heat damage. Spatter was present on the connector block. The engine compartment connector block sustained heat damage.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the interior compartment of the vehicle. The area of origin was determined to be on the right driver's side of the dashboard. The specific area of origin was the fuse block connector.

Potential Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined without a more intrusive inspection of the connector block of the fuse panel. The most probable cause of the fire was a high resistance connection.

Evidence Collected:

The dashboard, instrument panel, wiring harness and fuse block with connectors was retained for possible future examination and are located in the Charlotte, North Carolina office.

Interview:

Mr. was interviewed on June 25, 2019, and provided the following information. He drove the involved vehicle approximately once a week. He had no prior problems with vehicle. The emergency flashers were in use at the time of the fire. He was driving when he noticed smoke. He looked down and saw smoke coming from the fuse box. He pulled over immediately. A customer provided a portable fire extinguisher. After using the portable fire extinguisher, he reported the fire.

Service Records:

A review of the service records provided for the involved LLV did not reveal any recent repairs or work that would have caused or contributed to the cause of the fire. The last preventative maintenance was reported to be June 14, 2019.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles W. Feeley

Charles W. Feeley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1

View of the exterior front of the vehicle.



Photograph 2

A view of the dashboard.



Photograph 3

A view of the interior side of the instrument panel.



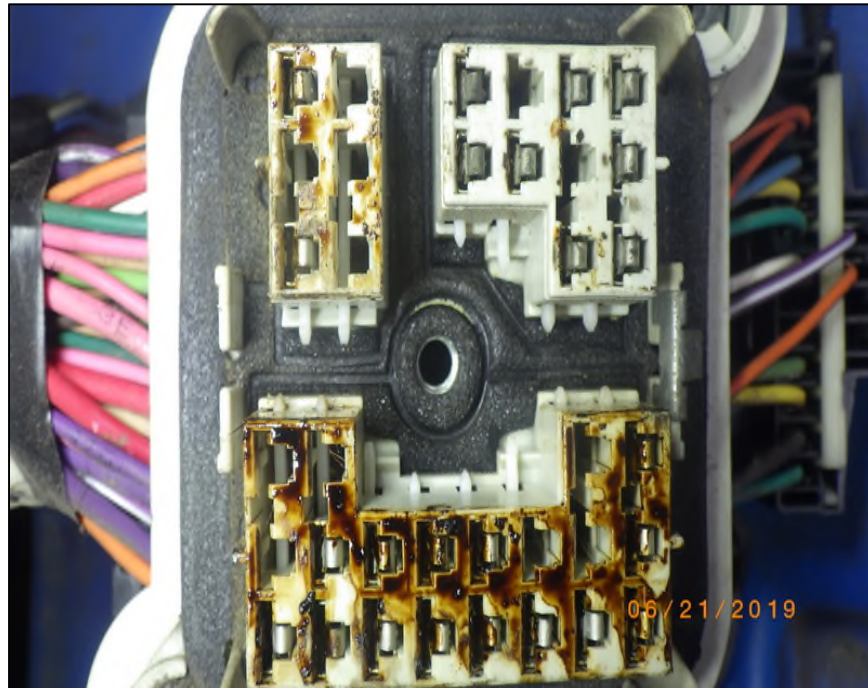
Photograph 4

A view of the fuse block.



Photograph 5

A view of the fuse block connector.



Photograph 6

A view of the engine compartment connector block.



Curriculum Vitae



Charles W. Feeley, CFEI, CFI

Fire Consultant
Fire Division

Background

Mr. Feeley is a Certified Fire and Explosion Investigator and Certified Fire Investigator. He is a Licensed Private Investigator in Delaware, New York, Pennsylvania, Virginia and West Virginia, and holds Certified Asbestos Awareness in Maryland. He was a member of the Baltimore City Fire Dept. for 35 years where he was involved in many different emergency positions including Firefighter, Lieutenant, Captain, Chief Safety Officer, Battalion Commander and Division Chief. Mr. Feeley has completed numerous educational seminars and continuing educational courses.

Mr. Feeley investigated over 550 fires in four years as an investigator and in excess of 5,000 fires as an incident commander at fire scenes. He has given expert testimony in civil and criminal court cases. He supervised the Office of the Fire Marshal in Baltimore City. He also supervised special projects such as the Arson Task Force, juvenile fire setters program, an educational intervention program and public education programs.

At Rimkus Consulting Group, Mr. Feeley has conducted over 1050 fire origin and cause determinations that include, but are not limited to, assignments involving residential, commercial, industrial, passenger and commercial vehicles, marine, farm implement/equipment, appliance and electrical equipment related fires.

Mr. Feeley has been recognized for his achievements by being the recipient of awards that include Distinguished Unit Citation, Meritorious Conduct Award, Exemplary Performance, and Distinguished Service Award.

Contact Information

(410) 872-9000
cwfeeley@rimkus.com

9125 Guilford Road,
Suite 108
Columbia, MD 21046



Rimkus Consulting Group, Inc.
1661 East Camelback Road, Suite 124
Phoenix, Arizona 85016
(866) 552-6758 Telephone
(602) 216-2201 Facsimile

March 23, 2018

Re: RCG File No: 01708865
LLV Number: 1258522
VMF Location: 1501 South Cherrybell Stravenue Tuscan, Arizona
Subject: Preliminary/Final Report

Dear

On March 12, 2018, Fire Consultant Thomas D. Kane, IAAI-CFI, with Rimkus Consulting Group Inc., conducted an on scene fire origin and cause investigation of the fire incident that occurred on March 5, 2018, that involved a US Postal Service vehicle LLV 1258522. The fire occurred while the vehicle was in transit at 9500 East 42nd Street in Tucson, Arizona. The Grumman manufactured body was mounted on a 1991 Chevrolet S10 chassis; VIN 1GBCS10A0M2927195. The vehicle was at the Tuscan VMF located at 1501 South Cherrybell Stravenue in Tuscan, Arizona.

We performed a comprehensive vehicle inspection, documented the incident, and reviewed the vehicle maintenance history and internal incident report. This report was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire & Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the left rear quadrant of the engine compartment.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of ignition of either leaking or atomized engine fluid coming in contact with the hot surface area of the components in the area of the exhaust manifold.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed on the exterior of the LLV. The cover over the cab area of the vehicle had melted and/or been consumed by the fire as had the covering for the engine compartment. Severe fire damage was observed to the both the left and right front fenders as well as the top of the LLV. All four tires were intact with the exception of the front mail side tire that was observed with severe fire damage. The exterior sustained severe fire damage to the front-end and operator's compartment. The cargo area was intact.

Interior Inspection:

The cargo area was intact and sustained moderate smoke damage. The driver's compartment sustained severe fire and heat damage. All of the combustible materials located within this area were consumed by the fire. The gear shift selector was in "PARK" and the ignition was in the "OFF" position with the key removed. The fuse block was melted and its components could not be evaluated. The remaining electrical components in the dashboard sustained severe fire damage and could not be identified. The fire damage in the interior of the LLV was consistent with a fire originating in the engine compartment and progressing into the interior.

Engine Compartment Inspection:

This vehicle was equipped with a General Motors 2.5L, four-cylinder, gasoline engine. The engine compartment sustained severe fire damage and was identified as the general area of fire origin by the driver. A detailed analysis of the remaining fire patterns indicated that the fire originated in the left rear quadrant of the engine compartment.

The left rear quadrant contained the fuel filter. Maintenance records indicated that the fuel filter had been replaced on the morning of the fire. The fuel filter had upper and

lower threaded fuel line connections. The upper connection ran from the fuel filter to the the fuel injector and had a side port adapter to check the fuel pressure. The upper threaded fuel line connection was secure. The lower connection ran from the fuel pump to the fuel filter. Oxidation was present and the fuel line connection could be loosened by hand.

Undercarriage Inspection:

Examination of the undercarriage revealed fire damage to the front end of the vehicle on the left side. No fire damage was observed to the rear area of the undercarriage. Fire damage was observed beneath the left side of the engine compartment.

Fuse Panel Inspection:

The fuse panel had sustained severe fire damage. The condition of the fuses within the panel could not be determined due to the severe fire damage.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated in the left rear quadrant of the engine compartment.

Potential Contributing Factors:

The fire was caused by a fuel leak at the lower threaded fuel line connection on the fuel filter. Gasoline from the loose connection sprayed onto hot engine surfaces resulting in the ignition of fuel vapors. The resulting fire then spread to other combustible materials inside the engine and driver's compartments.

Evidence Collected:

No evidence was collected.

Interviews:

We were provided with a written statement from the mail carrier, stated that on Monday, March 5, 2018, she was driving on Route 167 when she observed smoke coming from the engine compartment and pulled over. A small fire was first observed in the left rear area of the engine compartment.

Service Records:

A review of the provided service records for the involved LLV revealed that the last preventative maintenance was conducted on June 12, 2017. Maintenance records indicated that the fuel filter had been replaced on the morning of the fire. Recent repairs may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Thomas D. Kane

Thomas D. Kane, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

March 23, 2018
RCG File No. 01708865

Photograph 1
USPS LLV 1258522.



Photograph 2
Left side of engine compartment. Arrow points to fuel filter.



March 23, 2018
RCG File No. 01708865

Photograph 3

Fuel filter in left rear quadrant.



Photograph 4

Lower fuel line connection.



March 23, 2018
RCG File No. 01708865

Photograph 5
Overall engine compartment.



Photograph 6
Lower fuel line connection.



March 23, 2018
RCG File No. 01708865

CVs



**THOMAS D. KANE, I.A.A.I.-C.F.I., P.I.
FIRE CONSULTANT**

Mr. Kane specializes in fire origin and cause investigation, and consultation. Mr. Kane has over twenty-five years of experience in law enforcement with half of his career as an Arson Detective. Mr. Kane has investigated and determined the cause and origin of over one thousand fires occurring in commercial structures, residential homes, recreational vehicles, automobiles, and wild lands. Mr. Kane has been recognized as an expert witness in both criminal and civil court, in the fields of fire cause and origin, building construction, criminal investigations, firearms, transient criminal groups, and issues relating to building safety and security.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

State University of New York, College at Buffalo, Bachelor of Science, Criminal Justice.
City of New York, Police Academy, New York City Police Officer certification.
Suffolk County, New York, Police Academy, New York State Police Officer certification.
Phoenix Regional Police Academy, Arizona Police Officer certification.
International Association of Arson Investigators, Certified Fire Investigator, #28-036.
International Association of Arson Investigators, member since 2002.
International Association of Arson Investigators, Arizona Chapter, member since 2000.
Maricopa County Fire Investigation Task Force, member since 2000
FBI Joint Terrorism Task Force on Arson, formed to apprehend the "Phoenix Mountain Preserve Arsonist," in 2000.
National Association of Bunco Investigators, member since 1999.
Licensed Contractor, Arizona Registrar of Contractors, since 2000.
Licensed Private Investigator, Arizona Department of Public Safety, since 2004.
Licensed Private Investigator, New Mexico PI Board, since 2014.

Mr. Kane has over seven hundred hours of classroom and practical instruction in fire dynamics, arson, and general investigations. Classes have included interviews and interrogations, covert surveillance technology, fire science, fire behavior, fire chemistry, hazardous materials, flammable liquids, fire origin and cause determination, electrical fire investigation, explosion scene investigation, and evidence collection and preservation. These are to mention only some of the areas in which formal training has been received.

EMPLOYMENT HISTORY

1988 - 1989	New York City Police Department (NYPD)
1989 - 1993	Suffolk County Police Department (SCPD)
2004 - 2006	Crawford Investigative Services, Fire Investigator
2006 - 2008	Jerry James and Associates, Fire Investigator
2008 - 2013	Fire Cause Analysis, Fire Investigator
1993 - Present	Scottsdale Police Department (SPD)
2004 - Present	Private, Certified Fire Investigator (IAAI)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
119 Marketridge Drive, Suite H
Ridgeland, MS 39157
(877) 774-6587 Telephone
(601) 853-8303 Facsimile

Certificate of Authorization No. 00001307

October 27, 2016

Re: RCG File No: 52206412
LLV Number 1258533
VMF Location: 2390 Texas Avenue in Shreveport, Louisiana
Subject: Preliminary/Final Report

On September 5, 2016, a fire involving USPS LLV 1258533 occurred. At the time of the fire, the vehicle was located at 182 Wesley Drive in Ruston, Louisiana. On September 9, 2016, Rimkus Consulting Group, Inc. was retained to determine the origin and cause of the fire.

Our inspection of the vehicle occurred on September 14, 2016, at the USPS Vehicle Maintenance Facility (VMF) located at 2390 Texas Avenue in Shreveport, Louisiana. In the course of our work, we inspected and photographed the vehicle, reviewed maintenance and repair records and completed interviews. The work to complete this assignment was performed by W. Andrew Asbell, IAAI-CFI, District Manager/Fire Consultant. A technical review of this file was completed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association 921 – “Guide for Fire & Explosion Investigations”.

Conclusions

1. The fire in the involved LLV was determined to have originated in the engine compartment.

2. The specific area of fire origin was determined to be on the left (mail) side of the engine compartment at and around the fuel lines and exhaust manifold.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of atomized gasoline from a damaged fuel line igniting on the hot surface of the exhaust manifold of the operating LLV.

Observations

Exterior Inspection:

An exterior examination of the LLV commenced at the front and continued in a counterclockwise direction. Exterior fire damage was observed along all sides of the LLV. The most severe area of exterior fire damage was located along the front left corner of the LLV and in proximity to the engine compartment. As a result of radiant heat and fire exposure, the exterior windows were not intact. The left front tire was not intact and displayed fire damage and mass loss. The remaining three tires were intact. The exterior fire patterns revealed that the fire communicated outward from the left side of the engine compartment.

Interior Inspection:

An interior examination of the LLV revealed fire damage and mass loss within the operator/cargo compartment. As a result of the fire, the majority of the combustible materials located in the dash and front portion of the operator's compartment had been consumed. The rear portion of the cargo compartment displayed less fire damage and mass loss than the front portion. Fire damaged remains of numerous packages were observed within the rear cargo compartment. Fire patterns revealed that the fire communicated outward from the left side of the bulkhead and inward along the lower portion of the dash and windshield opening. The fire-damaged ignition switch was inspected and the key was still in place within the ignition. The ignition and key were observed in a forward position and were consistent with being in the "run" position at the time of the fire. This would have enabled the fuel pump to continue to operate until either the battery was de-energized or the conductors connected to the fuel pump were disconnected.

Engine Compartment Inspection:

The engine compartment was examined. The 2.5 liter engine was manufactured by General Motors. Fire damage and mass loss was observed throughout the engine compartment. The most severe area of fire damage and mass loss was located along the left side of the engine and in proximity to the exhaust manifold and the fuel lines. Fire patterns communicated upward and outward from the left side of the engine.

At the time of the fire, there was a single 12-volt battery mounted along the right front corner of the engine compartment. The battery displayed fire damage and mass loss along the upper portions. The 12-volt battery was connected to the LLV via side mount terminals. Fire damage was observed to the battery conductors, and the majority of the insulation had been consumed. As a result of the fire, the battery conductors were not connected to the battery at the time of my inspection. No physical evidence of adverse electrical activity was observed to the battery conductors.

As a result of the fire, numerous electrical conductors and harnesses were damaged within the engine compartment. No physical evidence of adverse electrical activity was observed within the engine compartment.

The brake master cylinder and brake fluid reservoir were located along the right rear corner of the engine compartment. The brake lines appeared to be intact and fire damage was observed to the lines. The brake master cylinder and the brake fluid reservoir displayed fire damage and had fallen down into the engine compartment.

The alternator was located along the right front portion of the engine. Fire damage was observed to the alternator. No physical evidence of adverse electrical activity was observed to the alternator or the conductors connected to the alternator. As a result of the fire, the belt connected to the front pulley of the alternator had been mostly consumed.

The fuel filter was located along the left front corner of the engine. The fuel lines that were connected the fuel filter were routed from the left side of the engine and downward toward the frame rail. As a result of the fire, the flexible sections of the fuel lines had been consumed and the fuel lines were not intact within the engine.

Undercarriage Inspection:

The undercarriage of the LLV was inspected. Fire damage was observed along the engine compartment. The fuel lines were routed through the interior of the left frame rail. The frame for the involved LLV was an AM General style frame.

Fuse Panel Inspection:

The fuse panel was located along the right side of the dash and in proximity to the steering column and control pedals. Severe fire damage was observed to the fuse panel. No physical evidence of adverse electrical activity was observed to the fuse panel.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated along the left side of the engine, and in proximity to the fuel lines and the exhaust manifold. The material first ignited were uncontained gasoline vapors as a result of a leak within the fuel system. The ignition source of the fire was heat generated from the operational engine's exhaust manifold or sparks generated from the operational alternator. The specific ignition sequence and cause of the fire was a direct result of gasoline vapors from a leak within the fuel system being ignited by the hot surface of the exhaust manifold or sparks produced from the operational alternator.

Potential Contributing Factors:

A potential contributing factor was a possible gasoline leak within the fuel system. An odor of gasoline was detected by the LLV's operator prior to the fire being observed.

Evidence Collected:

No physical evidence was collected for further inspection or laboratory analysis.

Interview:

At the time of the fire, the LLV was being operated. The driver reported that she was delivering Amazon packages on the date of the fire (Labor Day). On the date of the fire, she smelled an odor of gasoline emitting from the engine compartment. She applied the brakes to deliver a package in a mailbox when she observed flames emitting from the engine compartment. She exited the LLV and called 911 to report the fire. Reportedly, she was not able to remove her personal items or parcels from the LLV.

Service Records:

A review of the service records for the involved LLV indicated that on August 29, 2016, a repair or work was done in reference to a "no start" condition. The records do not indicate what repairs were made; however, this repair could be associated with the cause of the fire. There was no other recent work that would have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to

determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

W. Andrew Asbell

W. Andrew Asbell, IAAI-CFI
District Manager/Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CV

October 27, 2016
RCG File No. 52206412

Photograph 1
Front and left side.

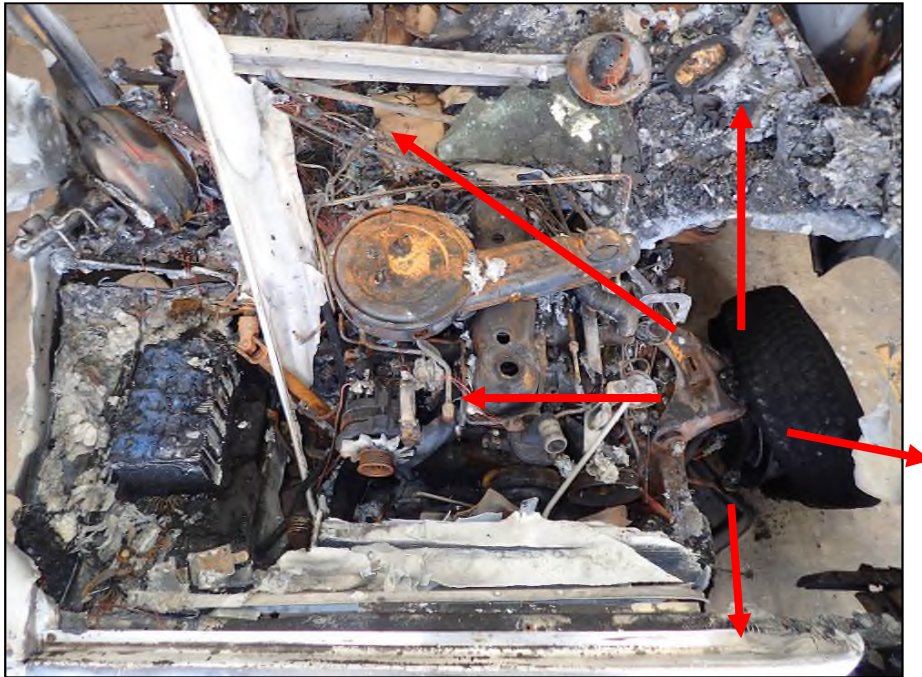


Photograph 2
Rear and right side.



Photograph 3

Top side of the engine compartment.



Photograph 4

Left side of the engine and area of fire origin.



October 27, 2016
RCG File No. 52206412

CVs



**W. ANDREW ASBELL, IAAI-CFI, CFEI, CVFI
District Manager/Fire Consultant**

Mr. Asbell is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI), and a Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators. He served as a Fire Investigator with the City of Charlotte, NC Fire Department, the City of Norfolk, VA Fire-Rescue, and as a private fire investigator where he investigated and determined the origin and cause of more than 1,100 fires and explosions to include industrial facilities, commercial and residential structures, passenger vehicles, heavy equipment, and fire-related fatalities. Mr. Asbell has completed numerous educational seminars and continuing education courses in the field of fire investigation and fire code enforcement. Mr. Asbell has testified and been qualified as an expert witness in court proceedings pertaining to fire origin and causation.

Mr. Asbell has coordinated and instructed continuing educational training programs involving the investigation of fires to public fire and police officials, insurance adjusters and investigators, and attorneys. This includes live fire training involving structures and vehicles.

In addition to his fire investigation experience, Mr. Asbell served as a firefighter, law enforcement officer, Emergency Medical Technician, and as a Nationally Registered EMT-Paramedic for over eighteen years.

EDUCATION

University of Richmond, Richmond, VA
Graduate Studies in Human Resources Management, 2006

East Carolina University, Greenville, NC
Bachelors in Science in Criminal Justice, 1999

CERTIFICATIONS & LICENSES

Certified Fire Investigator (CFI) – International Association of Arson Investigators, 2010,
Certificate # 24-031507

Certified Fire and Explosion Investigator (CFEI) – National Association of Fire Investigators, 2011

Certified Vehicle Fire Investigator (CVFI) – National Association of Fire Investigators, 2011

Private Investigator Licenses: State of Louisiana, State of Arkansas, and the State of Tennessee



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
3620 Horizon Drive, Suite 200
King of Prussia, PA 19406
(888) 623-1460 Telephone
(610) 941-1288 Facsimile

August 23, 2016

Re: RCG File No: 47702087
LLV Number: 1259784
VMF Location: 1136 Western Avenue in Pittsburgh, Pennsylvania
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was requested to examine LLV 1259784, VIN 1GBCS10A3M2928518. The vehicle was examined at the USPS Pittsburgh VMF; located at 1136 Western Avenue in Pittsburgh, Pennsylvania. The fire incident reportedly occurred at 1825 5th Avenue in McKeesport, Pennsylvania at World Auto.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on July 29, 2016. Our work to complete this assignment was performed by Fire Consultant Jonathan Sivils, IAAI-CFI. This report and case was reviewed by Mr. Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at and around the rubber fuel lines on the left (mail) side of the engine compartment routed in the area of the exhaust manifold.

3. The specific ignition sequence and cause of the fire was the direct result of the a backfire that occurred and ignited collected gasoline vapors while the vehicle was being serviced by a third party maintenance shop.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed to the front of the vehicle with more severe damage noted to the left side. The hood and roof along the front were consumed. All of the window glass in the vehicle was broken. The roof along the rear was intact. The front tires were burned while the rear tires remained intact.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred to the front dashboard area. The dashboard had melted and the majority of the electrical wiring and other components that are housed within the dashboard were severely damage. The electrical wiring that could be examined did not display any physical evidence of adverse electrical activity.

Engine Compartment Inspection:

The engine compartment was examined. Flame damage was observed throughout the engine compartment with the most severe damage in the compartment located along the rear of the engine closest to the firewall on the left side. The plastic and rubber engine components in this area were consumed.

The fuel system was examined and revealed to be the original GM fuel filter system which was severely damaged. The fuel lines were routed along the rear of the engine. The fuel filter was located just to the rear of the engine on the left side. The filter was intact but all fuel lines to the engine were consumed. The fuel line connectors revealed the bottom line was severely oxidized while the top was not. The battery for the vehicle was located at the front right side of the engine compartment and had sustained severe fire damage but remained somewhat intact. All battery cables remained intact with no signs of adverse electrical activity. The starter was examined and found to be intact. The electrical conductors for the starter revealed that they were intact and showed no signs of adverse electrical activity. There was no physical evidence that the LLV was equipped with a High Energy Ignition (HEI) distributor.

Undercarriage Inspection:

Examination of the undercarriage revealed only distortion to the paint closer to the front indicating heat travel from the engine compartment area or front of vehicle. The frame rail components were GM and were undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed it was consumed by fire.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage, witness statements and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment of the vehicle at the fuel lines. The specific ignition sequence and cause of the fire was gasoline leaking from the fuel lines that came in contact with the hot exhaust causing the fire.

Potential Contributing Factors:

The vehicle was currently being repaired by mechanics for having a fuel problem. The mechanics were attempting to check compression on the engine when the vehicle back fired and ignited.

Evidence Collected:

No evidence was collected.

Interviews:

On June 16, 2016 a telephone interview was conducted with the mechanic working on the vehicle. He reported the following information:

- On the day of the fire at approximately 1:00 P.M., he was attempting to check compression on the engine.
- He had changed the fuel injector and fuel pump relay earlier that day.
- He said the engine backfired and the vehicle caught fire.
- He went for a fire extinguisher and when he returned, the flames were too big and he was unable to extinguish the fire.

- He immediately called 911.
- No other issues or problems were reported with the vehicle on the day of the fire.

Service Records:

A review of the service records for the involved LLV did not reveal any records of service or repair that would have caused or contributed to the cause of the fire prior to the day of the fire. On the day of the fire, the LLV was being worked on when the fire occurred. The LLV was being serviced by a third party vendor, Jerry Rost Automotive.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jonathan K. Sivils

Jonathan K. Sivils, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 23, 2016
RCG File No. 47702087

Photograph 1
Right front of vehicle.



Photograph 2
Left front of vehicle.



August 23, 2016
RCG File No. 47702087

Photograph 3
Dashboard area.



Photograph 4
Engine compartment.



August 23, 2016
RCG File No. 47702087

Photograph 5
Under Carriage towards rear.



Photograph 6
Undercarriage towards front.



August 23, 2016
RCG File No. 47702087

Photograph 7

Engine compartment on left side.



Photograph 8

Fuel filter.



August 23, 2016
RCG File No. 47702087

Photograph 9
Fuel filter.

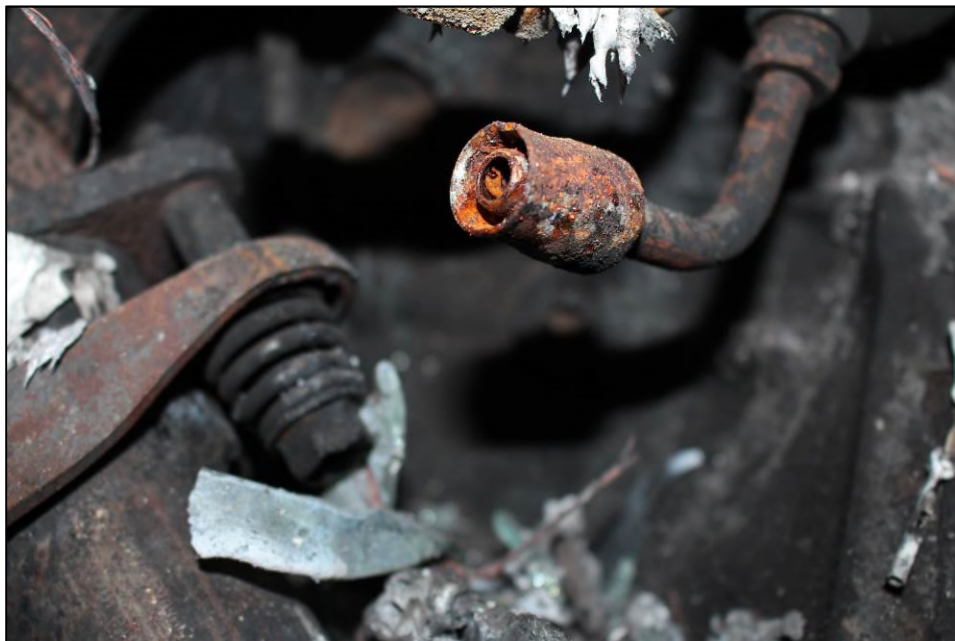


August 23, 2016
RCG File No. 47702087

Photograph 10
Fuel line fittings.



Photograph 11
Lower fuel line fitting.



August 23, 2016
RCG File No. 47702087

CVs



Jonathan Sivils, IAAI-CFI, FIT, CFEI Fire Consultant

Mr. Sivils is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, as well as a Fire Investigation Technician (IAAI-FIT) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). He also holds an Associate of Science Degree in Fire Protection Technology. In a career spanning more than 25 years in the fire service, he has investigated and determined the origin and cause of more than 800 fires, to include commercial structures, residential structures, vehicles, marine and heavy equipment. He has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Sivils is a court-qualified expert witness in Criminal and Civil proceedings. Mr. Sivils has extensive training in fire and criminal investigations.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S Fire Protection Technology – Americus University, Washington D.C. – 2002
Bucks County Fire Chiefs and Firefighters Association
Bucks County Fire Marshal Association
International Association of Arson Investigators
National Association of Fire Investigators
National Fire Protection Association
Pennsylvania Association of Arson Investigators

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2012 – 2015	Donan Engineering Company, Inc.
2007 – 2012	Bucks county Fire Marshal Office, Bucks County, Pa
2005 – 2007	U.S. Department Of Defense Fire and Emergency Services
2009 – 2010	NEFCO Fire Investigations, Philadelphia, Pa
2003 – 2005	U.S. Department of Homeland Security
1998 – 2003	U.S. Department Of Defense Fire and Emergency Services
1993 – 2010	Penndel Fire Company, Penndel, Pa



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
13900 Alton Pkwy., Suite 123
Irvine, CA 92618
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

May 22, 2017

Re: RCG File No:

	71805772
LLV Number:	1260935
VMF Location:	1900 West Redlands Boulevard San Bernardino, California
Subject:	Preliminary/Final Report

Dear

On May 1, 2017, a fire occurred involving a USPS LLV 1260935. The loss location was reported as 333 East Amado Road in Palm Springs, California. LLV 12609351 was examined at the VMF located at 1900 West Redlands Boulevard in San Bernardino, California.

Rimkus Consulting Group, Inc. was retained to examine the 1991 Chevrolet LLV 1260935, VIN 1GBCS10A9M2929687, to determine the cause of the fire. During our investigation we conducted an examination of the fire damaged LLV, reviewed the written statement of carrier/driver Ms. Debra Micotto, and documented the vehicle with photographs. The vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on May 10, 2017. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated within the steering column components of the involved LLV.

2. The specific area of origin was at and around a battery cable routed through the area of fire origin that sustained severe adverse electrical damage.
3. The specific ignition sequence and cause of the fire was determined to be within the steering column components when the steering shaft was electrically energized by direct contact with the unfused battery hot lead. This adverse electrical event at the steering shaft followed electrical ground paths in the steering column assembly, generating high localized heat in the process.
4. Wear and degradation of components allowed an unfused adverse electrical event to develop at the battery hot lead where it was in direct contact with the steering shaft within the engine compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the front of the vehicle and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The vehicle sustained no visible exterior fire damage.

Interior Inspection:

The operator compartment sustained no interior fire damage, except to the steering column which was removed and replaced prior to our examination. The fire damaged steering column was destructively examined in the VMF facility with the assistance of a USPS mechanic.

The operator compartment sustained only minor soot particulate accumulation at the dashboard in the vicinity of the steering column. Residue of a dry chemical extinguishing agent was also present in the vicinity of the steering column location.

There was no fire damage to the cargo area.

Steering Column Inspection:

Examination of the fire damaged steering column was conducted. During the exam, evidence of an adverse electrical event was observed which appeared as an electrical ground fault showing observable indications of electrical current to the steering column components including the horn ground contact and ignition steering column interlock rod.

The metal horn ground contact was partially melted from localized heat, in contrast to the supporting plastic carrier, which remained intact. This allowed high electrical current to flow through the metal ground contact.

The steering interlock rod was melted and fused to the steering column metal housing nearest to the top of the column. The metal rod exhibited localized high heat where it fused to the metal column and parted with the top portion of the rod. This rod provided an electrical ground path from the steering shaft to the metal housing with the vehicle in park and ignition off.

The electrical wiring harnesses contained in the steering column was observed intact and plastic wire insulation was not damaged, and no adverse electrical activity was observed within the wiring harness.

During the examination of the steering shaft, a section approximately one inch wide, where paint on the steering shaft was worn away from contact with the battery hot lead was observed. Rotating the steering shaft, evidence of electrical arcing was observed that corresponded to the electrical activity observed to the battery hot lead.

Engine Compartment Inspection:

The engine compartment sustained no visible fire damage. However, the battery hot (positive) lead was observed with electrical arcing where plastic insulation material had abraded and worn away in the immediate vicinity of the steering shaft. In addition, this section of the hot lead had been wrapped with plastic electrical tape, a prior attempt to protect the insulation material from abrasion with the steering shaft was observed. The LLV was equipped with a 2.5L, four-cylinder gas engine.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of fire damage along the bottom side of the engine as well as the sides of the engine. The involved LLV was mounted on a GM frame. The fuel lines were examined and it appeared the lines had failed during the fire progression. The fuel tank was examined and the vehicle fuel filter system was equipped with a GM filter. Both were free of fire damage. The exhaust system was intact and the transmission did not reveal any leaks. The vehicle sustained no visible undercarriage fire damage.

Fuse Panel Inspection:

An examination of the fuse panel revealed that it had sustained no fire damage. All fuses were intact and no blown fuses were observed.

Area of Fire Origin:

Based on the observed patterns of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the steering column components when the steering shaft was electrically energized by direct contact with the unfused battery hot lead. The specific area of origin was at and around a battery cable routed through the area of fire origin that sustained severe adverse electrical damage. This adverse electrical event at the steering shaft followed electrical ground paths in the steering column assembly, generating high localized heat in the process.

Contributing Factors:

Wear and degradation of components allowed an unfused adverse electrical event to develop at the battery hot lead where it was in direct contact with the steering shaft within the engine compartment.

Evidence Collected:

The vehicle and all examined components were left in the care of USPS at the VMF facility at 333 East Amado Road in Palm Springs, California.

Interviews:

It was reported by the carrier that she had finished her route and parked the vehicle at the post office when she observed "sparks" within the steering column. She reported that she notified a co-worker who then utilized a fire extinguisher to extinguish the fire. She reported that she had no issues with the vehicle prior to the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

May 22, 2017
RCG File No. 71805772

Photograph 1

1991 Chevrolet LLV 1260935, VIN 1GBCS10A9M2929687. No exterior fire damage.



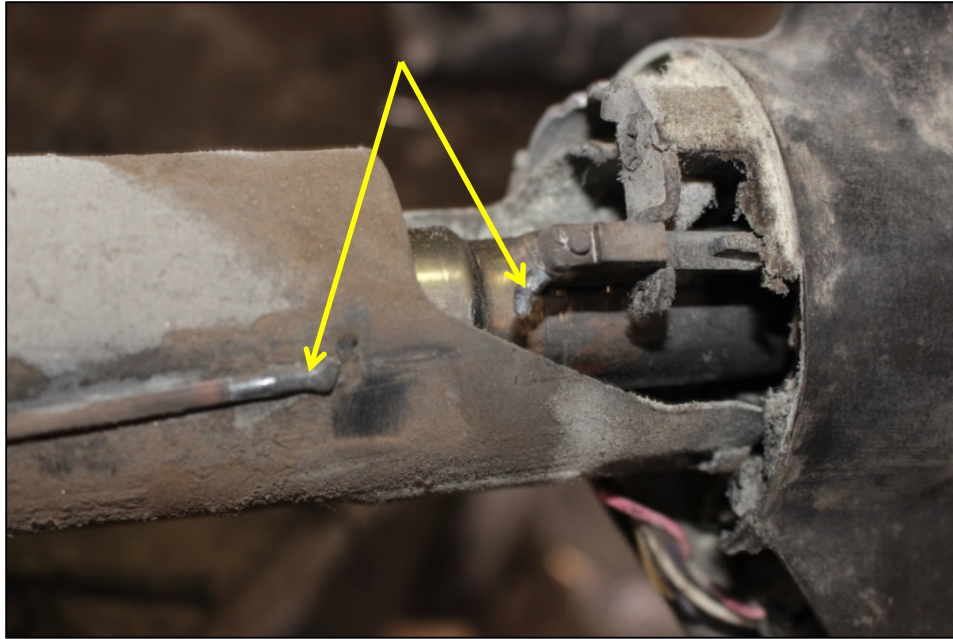
Photograph 2

Interior, steering column (replaced) and dashboard.



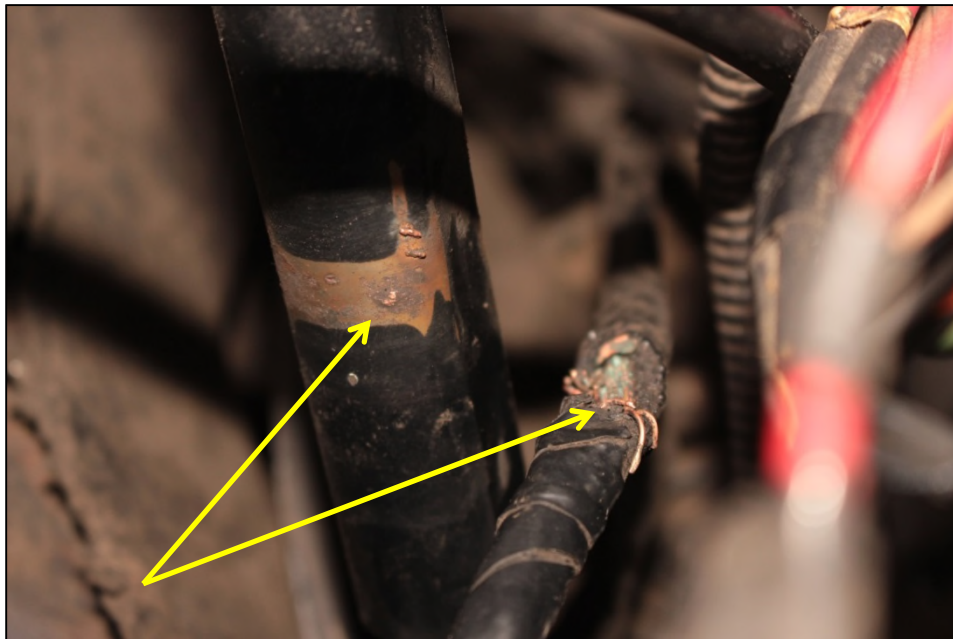
Photograph 3

Steering interlock rod fused to steering column and separated from top, yellow arrows.



Photograph 4

Steering shaft and electrical hot lead evidenced by electrical ground fault, yellow arrows.



May 22, 2017
RCG File No. 71805772

Photograph 5
Interior dash area and steering column (USPS).



Photograph 6
Steering column before removal (USPS).



May 22, 2017
RCG File No. 71805772

Photograph 7
Engine Compartment.



Photograph 8
Undercarriage .



May 22, 2017
RCG File No. 71805772

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
7501 South Quincy Street, Suite 160
Willowbrook, Illinois 60527
(866) 746-5871 Telephone
(630) 321-1847 Facsimile

March 21, 2019

Re: RCG File No: 50906362
LLV Number: 1261426
VMF Location: 7423 South Sayre Avenue Bedford Park, Illinois
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 1261426, VIN 1GBCS10AIM2930266. The vehicle was examined at the USPS Bedford Park Vehicle Maintenance Facility. The fire incident reportedly occurred at 21843 Jeffery Avenue in Sauk Village, Illinois on January 23, 2019.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on February 7, 2019. Our work to complete this assignment was performed by Fire Consultant David A. Mager, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment in the area of the bulkhead on the left (mail) side of the vehicle.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a leak in the fuel injector throttle body and the atomized gasoline vapor coming in contact with a competent ignition source, in the immediate vicinity of the fuel lines or a hot surface ignition of the accumulation of engine fluids within the engine compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. There was extensive fire damage to the front portion of the vehicle. The left front fender was consumed by fire. Burn patterns indicated that the fire extended into the passenger compartment from the engine compartment. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured.

Interior Inspection:

Examination of the interior of the vehicle revealed extensive fire damage throughout. The dashboard had been consumed by fire. The left side of the bulkhead had a large opening where the heater core would have been. Burn patterns within the interior indicated that the fire entered the passenger compartment from the engine compartment.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L, fuel injected and had a standard ignition coil. The remains of the battery were located at the right front side of the engine compartment. The battery was significantly damaged by fire. We examined the conductors from the battery and observed no visible electrical activity. Burn patterns indicated the battery was attacked by the fire and not the cause. We examined the starter and observed it to be intact with no adverse electrical activity. The starter and battery were eliminated as a cause of the fire.

Fire damage in the engine compartment was more extensive on the left side of the vehicle. We examined the electrical conductors and observed no adverse electrical activity. We observed that the rubber fuel lines had been consumed by the fire. Burn

patterns on the left side of the engine indicated the fire extended up from the exhaust manifold and pipe.

Undercarriage Inspection:

Examination of the undercarriage revealed fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure up to where they entered the frame rail. The exhaust system was intact.

Fuse Panel Inspection:

The fuse panel was consumed by fire.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the engine compartment on the left side of the engine.

Potential Contributing Factors:

A fuel leak from the fuel lines may have allowed atomized gasoline to come into contact with the hot exhaust manifold and pipe causing a hot surface ignition.

Evidence Collected:

No evidence was collected.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records it was determined that maintenance work had occurred on the vehicle December 7, 2018, at which time the fuel pump, sending unit and strainer were replaced. There was no indication of maintenance performed on the fuel lines in the provided service records.

Interview

An interview with the supervisor provided the following information:

- The carrier reported seeing white smoke coming from under the engine hood.
- She pulled the vehicle to the side of the road and stopped.

- When she exited the vehicle it burst into flames.
- She was able to retrieve only her lunch from the passenger compartment before being chased away by the fire.
- She reported no unusual smells or sounds prior to the incident.
- She reported no problems with the vehicle prior to the fire.

Multiple phone calls and voice messages have been left for the carrier to be interviewed; they have all gone unanswered at the time of this report.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,

RIMKUS CONSULTING GROUP, INC.

David A. Mager

David A. Mager, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

March 21, 2019
RCG File No. 50906362

Photograph 1

Overall view of LLV 1261426.



Photograph 2

Burn pattern on remains of engine hood.



March 21, 2019
RCG File No. 50906362

Photograph 3

View of left side of vehicle.



Photograph 4

Discoloration of fuel line connection on left side of engine.



March 21, 2019
RCG File No. 50906362

Curriculum Vitae



DAVID A. MAGER, CFI FIRE CONSULTANT

Mr. Mager is an International Association of Arson Investigators Certified Fire Investigator, Illinois State Fire Marshall Office Certified Fire Investigator, Certified Fire Officer II, Hazardous Materials Technician "B" and a Illinois Department of Public Health Certified Paramedic.

Mr. Mager has an extensive professional background in the areas of firefighting and fire investigations, and has investigated over five hundred fires. His professional experience includes fire and explosion investigations, fire protection and detection system inspections as well as hazardous materials mitigations.

As an International Association of Arson Investigators Certified Instructor and a Certified Instructor II through the Illinois State Fire Marshall Office, Mr. Mager has conducted numerous live fire training exercises for Fire Fighters and Fire Investigators using authentic room furnishings as well as classes on fire behavior and evidence preservation.

Mr. Mager is a Retired Deputy Fire Chief and had been the Training Officer with the Midlothian, IL. Fire Department. He was an Assistant Team Leader for the Southwest Hazardous Materials Response Team and routinely responded to fire and hazardous materials incidents, fire investigations and conducted life safety inspections within the municipality.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator - Illinois State Fire Marshall Office
Certified Fire Investigator - International Association of Arson Investigators
Certified Instructor – International Association of Arson Investigators
Certified Fire Officer II – Illinois State Fire Marshall Office
Certified Hazardous Materials Technician "B" - Illinois State Fire Marshall Office
Certified Fire Department Incident Safety Officer – Illinois State Fire Marshall Office
International Association of Arson Investigators – Member
International Association of Arson Investigators (Illinois Chapter) – Member

EMPLOYMENT HISTORY

2008 – Present	Rimkus Consulting Group, Inc.
1987 – 2015	Midlothian Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, NJ 07631
(201) 368-8551 Telephone
(201) 368-8557 Facsimile

Certificate of Authorization No. 24GA28127700

December 15, 2016

Re: RCG File No:

LLV Number: 47809027
VMF Location: 1261575
Subject: 1195 Towbin Avenue in Lakewood, New Jersey
Preliminary/Final Report

Dear

Rimkus New York, PLLC was retained to examine LLV 1261575, VIN 1GBCS10A6M2930313 that was involved in a fire event. The vehicle was examined at the USPS Lakewood Vehicle Maintenance Facility located at 1195 Towbin Avenue in Lakewood, New Jersey. The fire incident reportedly occurred in the area of 26 Carlyle Drive in Bayville, New Jersey on November 26, 2016.

In the course of our work, we examined and documented the fire damaged vehicle on December 9, 2016, and interviewed the carrier/driver. Our work to complete this assignment was performed by Fire Consultant Harold W Henrich, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be at or around the throttle body and exhaust manifold.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of atomized gasoline being ejected from the throttle body which came into contact with the hot manifold and ignited.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a counterclockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire/thermal damage was noted to the entire front end of the LLV, all of the front end body parts and windshield structural supports were consumed by the fire event. The operator compartment roof over the driver's seat was partially consumed during the fire event. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, the two rear tires of the LLV were found to be of the same make, size and manufacturer, the two front tires were consumed during the fire event. There was no evidence to indicate that the brakes, wheel assembly or axles had failed. The fuel cap was in place and secured.

Interior Inspection:

Severe fire/thermal damage was observed to the interior operator compartment area. The dashboard and driver side seat upholstery were consumed during the fire event. A small section of the wall behind the driver's seat separating the cab and box area was consumed during the fire event. The mail table showed signs of distortion from the fire event. Interior of the box compartment sustained moderate thermal and soot damage.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine. The LLV was equipped with a GM fuel filter system and an aftermarket fuel filter located on the passenger side of the engine. The fuel system was examined and all metal fuel lines were observed to be intact. All rubber fuel lines located in the engine compartment were consumed by the fire event. The majority of the battery was consumed during the fire event; pieces of battery cell were located in the fire debris. The positive power cables along with the battery grounding cable were located and showed thermal damage, both battery connectors were intact. The engine oil and transmission fluid levels were examined and observed to be within their normal operating range. Severe fire damage was observed throughout the engine compartment.

with several components being consumed during the fire event. Severe thermal damage was observed to the front portion of the intake manifold and throttle body assembly located on the driver's side. The intake manifold and throttle body assembly was positioned towards the rear of the alternator. During the inspection process, the air cleaner assembly was difficult to remove from the throttle body assembly due to distortion of the assembly from the thermal conditions during the fire event. Upon further inspection of the throttle body assembly it was observed that the assembly was "loose" from where it mounts to the intake manifold.

Undercarriage Inspection:

The LLV was mounted on a GM frame which was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the engine/transmission showed signs of leaking fluids from around the pans. The front portion of the undercharge sustained moderate thermal damage from the fire event. Severe fire/thermal damage was noted to the wheel assembly on the driver side with lost tension on the driver's side coil spring.

Fuse Panel Inspection:

The fuse panel was consumed during the fire event; no identifiable parts of the fuse panel could be located within the fire debris. The interior wiring harness was located in the fire debris and sustained severe fire/thermal damage along with the control module.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated at or around the throttle body assembly, intake manifold area which was located behind the alternator. Review of the inspection records indicate the throttle housing was replaced at the Bayville facility on or around September 23, 2016.

Potential Contributing Factors:

An undetermined issue with the throttle body assembly discharging flammable liquid (gasoline) or spray onto a hot surface causing auto-ignition of the flammable liquid (gasoline) in the area of origin could not be eliminated. The throttle body assembly was determined to be loose from its mounting bracket on the intake manifold during the inspection; it is not known at this time if this was a contributing factor or caused by the fire event.

Evidence Collected:

No evidence was collected at the time of the inspection.

Interview:

On December 9, 2016, a phone interview was conducted with carrier/driver of LLV 1263475 at the time of the fire. Mr. reported the following information:

- He has been assigned to this LLV for two days while his primary LLV was in the shop for service. He stated this LLV was a reserve LLV that it was utilized by the carriers when their primary LLV was in the shop for service or repairs.
- He stated the only issues he had with this reserve LLV over the past two days was it was "running rough and hard to start".
- He stated on the day of the fire he had no other issues with the LLV other than what's described above.
- He stated the events leading up to the fire were as follows: he was driving between stops when a bystander alerted him to a fire underneath his vehicle. He immediately stopped the LLV, turned the ignition off and exited the LLV to check where the fire was coming from. He observed fire underneath the engine of the LLV; he described the location as between the two front tires. A bystander handed him a small fire extinguisher and he utilized it on the fire. He stated the fire appeared to go out, but when he pulled the hood release and the hood popped up, he could see the engine compartment on fire. He immediately retrieved all the mail from the LLV and notified his supervisor. A bystander called 911. He stated it took an extended amount of time for the fire department to arrive on scene because he was told they went to the wrong address first.
- Mr. stated that at no time prior to the fire being discovered, did he see any lights on the dash board, experienced any power loss to the LLV, and he did not see the fire or smoke prior to being notified of fire.
- Mr. stated he was not injured as a result of the fire.

Service Records:

A review of the service records for the involved LLV indicated that the VMF had made repairs to the EGR and Throttle on October 7, 2016 prior to the fire. There was no indication as to the problem encountered. There were no other listed repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NEW YORK, PLLC

Harold W. Henrich

Harold W. Henrich, IAAI-CFI

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

December 15, 2016
RCG File No. 47809027

Photograph 1
Left front of LLV.



Photograph 2
Right front of LLV.



December 15, 2016
RCG File No. 47809027

Photograph 3
Rear of LLV.

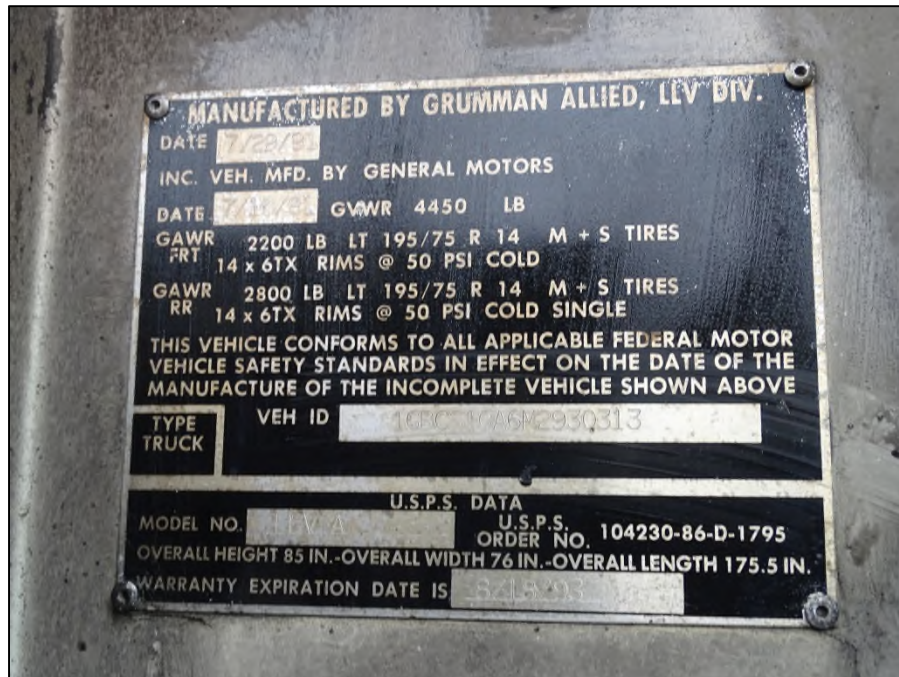


Photograph 4
Front engine compartment.



December 15, 2016
RCG File No. 47809027

Photograph 5
VIN Plate.



Photograph 6
Debris pile underneath LLV.



December 15, 2016
RCG File No. 47809027

Photograph 7

Right side of engine.



Photograph 8

Intake manifold.



December 15, 2016
RCG File No. 47809027

Photograph 9

Intake manifold, throttle body assembly.



Photograph 10

Fuel line assembly attaching to throttle body assembly.



December 15, 2016
RCG File No. 47809027

Photograph 11

Top view of throttle body.



December 15, 2016
RCG File No. 47809027

CVs



HAROLD W. HENRICH, IAAI-CFI, CFEI, CVFI FIRE CONSULTANT

Mr. Henrich is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and a Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators and a Certified Fire Investigator (NC-CFI) with the North Carolina Fire Rescue Commission. He has been active in the fire service for 30 years holding the positions of Firefighter, Captain, Fire Chief and Fire Marshal in both Career and Volunteer Departments.

Mr. Henrich areas of expertise is specializing in origin and cause fire investigations in both the public and private sectors involving over 500 fire causation on commercial, residential structures, vehicles and heavy construction equipment. He has completed and maintains state, national and international certifications as a Fire Investigator, Fire Instructor, Fire Inspector, Fire Officer, Fire & Life Safety Educator, Hazardous Materials, Firefighter, and completed numerous educational seminars and continuing education courses in the field of fire investigation.

Mr. Henrich while serving in the capacity of a Fire Instructor has coordinated and instructed continuing education courses within the Fire Service field and basic Fire Investigation classes.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Candidate, Columbia Southern University, Orange Beach, AL, B.S Fire Administration / Fire Investigation

International Association of Arson Investigators

Certified Fire Investigator, 2014

Expert Witness Court Room Testimony, 2014

National Association of Fire Investigators

Certified Fire and Explosion Investigator (CFEI), 2010

Certified Vehicle Fire Investigator, (CVFI), 2010

National Board on Fire Service Professional Qualification

Fire Investigator, NFPA 1033-2014, 2014

North Carolina Fire and Rescue Commission

Certified Fire Investigator, 2005

Fire Inspector Level III, 2012

Fire Life Safety Educator III, 2009

Fire Instructor II, 2001

Fire Officer II, 2005

Firefighter II, 1994

Hazardous Materials Level I, 2000

Hazardous Materials, Personal Protective Equipment, 2011

Hazardous Materials, Technical Decontamination, 2011

Hazardous Materials, Air Monitoring & Sampling, 2012



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
Eight Greenway Plaza, Suite 500
Houston, Texas 77046
(800) 580-3228 Telephone
(713) 623-4357 Facsimile

Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2019

March 21, 2019

Re: RCG File No: 11014130
LLV Number: 1261888
VMF Location: 1530 Greensmark Drive, Houston, Texas
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained on February 27, 2019, to examine LLV 1261888, VIN1GBCS10A5M2930741. The vehicle, make and model was a 1991, 1/2T Grumman LLV 91 RH. Our inspection and documentation of the vehicle took place on March 1, 2019, at the US Postal vehicle maintenance facility (VMF).

In the course of our work, we examined the fire-damaged vehicle on March 4, 2019, interviewed Mr. Mack Richardson, Supervisor Greens North VMF, and reviewed provided maintenance documentation. Texas. Our work was completed by Fire Consultant Joseph M. Ellington, IAAI-CFI. This report was reviewed for technical accuracy by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment of the involved LLV.

2. The specific area of origin was at the exhaust manifold on the left side of the engine. Engine oil was sprayed onto the exhaust manifold when an engine rod penetrated through the engine block.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a thrown rod through the engine block causing a hole that allowed engine oil to be expelled onto the hot exhaust manifold.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The front grill and lights of the LLV were observed to be consumed with severe fire damage. Complete consumption was observed on the hood of the engine compartment, from the middle of the compartment towards the bulkhead. The aluminum roof of the vehicle that covered the operator's compartment had melted as a result of the fire.

The driver's side door and frame adjacent to the steering wheel had also been melted by the fire's extension. The mail side of the engine compartment exterior aluminum frame was melted to just above the wheel well, however the door was mostly intact, indicating the fire had extended from the mail side towards the driver side of the passenger compartment.

No damage was observed to the exterior cargo area of the vehicle with the exception of blistered paint on the roof corresponding with fire spread from the direction of the engine and operator compartments. Based on the fire patterns observed, it was determined the fire initiated within the engine compartment near the bulkhead/dashboard then progressed into the operator's compartment through the windshield and bulkhead.

Exterior inspection of the vehicle revealed severe fire damage sustained within the engine compartment. The exterior panels and engine cover were consumed as well as both front tires.

The doors of the vehicle, that were slid back and open at the time of the fire, were intact. The cargo body area was intact as well as the rear bumper and rear wheels and tires.

Interior Inspection:

The interior cargo/mail area sustained minor to moderate fire, smoke, and soot damage. Fire patterns indicated the fire melted the aluminum panel between the operator's and

cargo compartment. Moderate smoke and soot damage was observed along the ceiling and upper side walls of the cargo space. Fire debris from the operator's compartment was observed on the floor of the cargo compartment.

The operator's compartment sustained severe fire and heat damage. Most of the combustible materials located within this area were consumed by the fire, including the fuse panel and various electrical conductors in the dashboard area on the driver's side. Fire patterns indicated this was the result of the fire's extension from the engine compartment near the bulkhead/dashboard on the mail side. The most severe damage was observed on the mail side of the compartment, where the bulkhead had completely burned through from the direction of the engine compartment. The bulkhead was mostly intact on the driver's side. The bundled wiring harnesses on the driver's side connecting from the fuse panel towards the Engine Control Module (ECM) sustained severe fire damage. The ECM had been positioned in the center of the dash and was observed with severe fire damage. The burn through hole in the bulkhead was observed to the left of the ECM. The remnants of an electric fan was found in the fire debris along the burned through area of the bulkhead.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment was observed with severe fire damage. The driver's side contained the brakes master cylinder, battery, alternator, rubber and plastic components and the majority of the electrical conductors within the compartment. The ignition coil and fuel lines were also on this side. However, this side of the compartment sustained less severe fire damage. Most of the components were observed to be intact however with severe fire damage. Fire patterns indicated that the severe damage and mass loss to the front of the engine compartment, including the radiator, fan blades, pulleys and hoses were caused by radiated heat originating from the center and bulkhead area of the mail side. No evidence was observed of the fire originating within the brakes, wheel hubs or tires in the area of the engine compartment.

The majority of damage to the engine compartment occurred on the mail side between the rear of the engine block and along the bulkhead/dashboard. Fire patterns indicated this was the area of origin. Various conductors and switches connecting to the mail side headlights, flashers, heater and fan blower motor were located in this area and were observed with severe fire damage. The spark plugs, plug wires and rubber boots were located a little further towards the front of the engine compartment and were intact, except the plug wires had apparently been consumed by the fire. The fuel lines came up along the rear of the engine and turned to the driver's side of the engine compartment. The fuel lines were observed to be intact in this area. Fire patterns indicated the fire

originated further to the mail side along the bulkhead where they extended into the mail side of the operator's compartment.

The battery for the vehicle was located at the front driver's side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be severely damaged by fire attached however intact; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range.

A large hole was noted in the lower front passenger side of the engine block opposite the left front wheel assembly.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle, except for a limited area below the rear of the engine compartment that appears to have been caused by drop down from above. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head. All four tires were intact.

No equipment was available to lift the vehicle. However, examination at ground level from the exterior revealed a rupture in the oil pan below the engine in approximately the same area as the hole noted in the side of the engine block.

Fuse Panel Inspection:

The fuse panel was not available for inspection as a result of the scope and severity of the fire's damage.

Area of Fire Origin:

Observable fire damage indicated the fire originated inside the engine compartment before spreading.

Potential Contributing Factors:

A mechanical internal failure of the engine, likely a thrown rod, ruptured the engine block and oil pan, damaged other engine components, and allowed fugitive oil to come into contact with the hot operating surfaces of the engine. Disassembly and examination of the engine would be necessary to identify the reason(s) for the failure.

Evidence Collected:

No evidence was collected.

Witness Statement:

Documentation provided to us indicated a USPS employee, was operating the vehicle on Sunday, February 17, 2019, at 19615 Juergen Road in Tomball, Texas. Mr. heard a bang and the vehicle stopped. Smoke was first observed from beneath the hood before the vehicle caught fire. The employee called 911 to report the fire. Mr. was unavailable to be interviewed before issuance of our report.

Service Records:

A review of the involved LLV service records was requested and reviewed. The LLV received a preventive maintenance service on January 25, 2019.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Joseph M. Ellington

Joseph M. Ellington, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

March 21, 2019
RCG File No. 11014130

Photograph 1

Exterior view of fire-damaged remains of vehicle from front driver side.



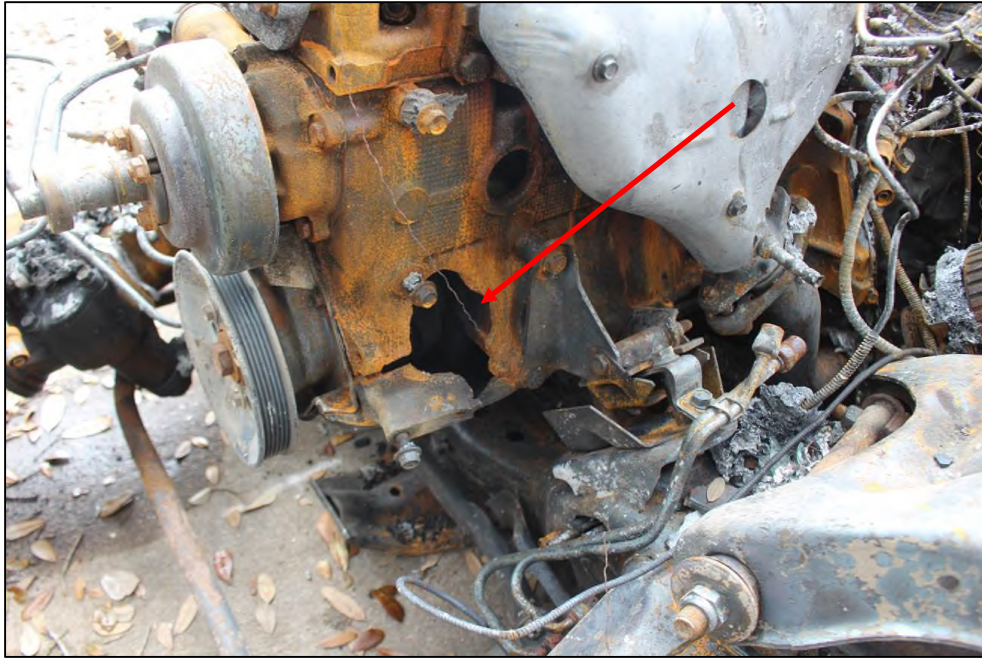
Photograph 2

Exterior view of vehicle from front passenger side.



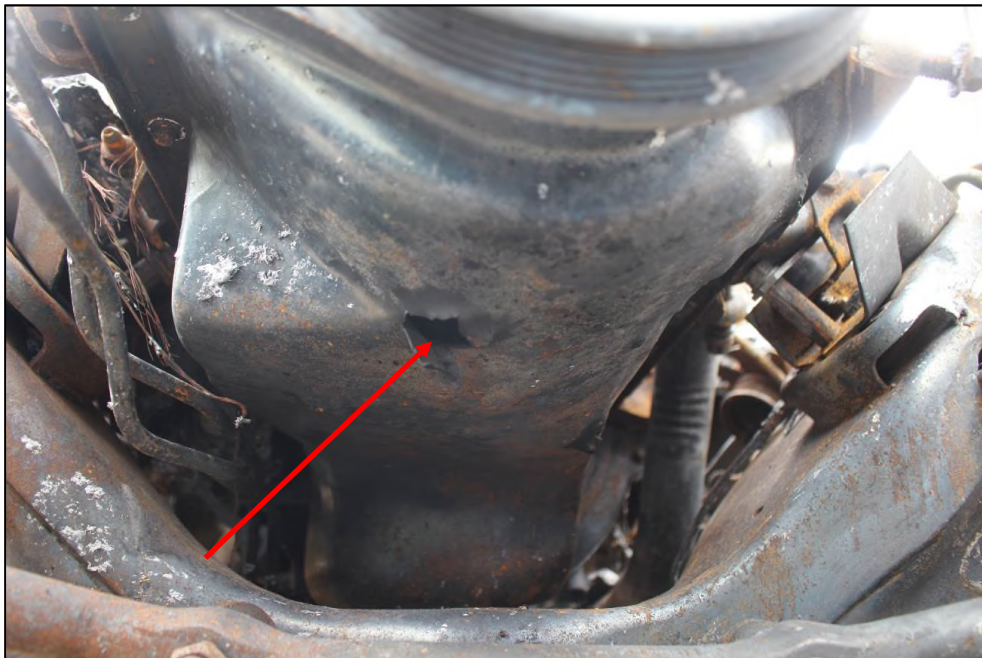
Photograph 3

Close-up of damage to passenger side of engine block.



Photograph 4

Corresponding hole in oil pan below the engine.



Curriculum Vitae



**JOSEPH M. ELLINGTON, IAAI-CFI, NAFI-CFEI, CFII, & CVFI
REGIONAL FIRE DIVISION MANAGER**

Mr. Ellington has over 30 years of experience in the field of advanced technical investigations including a combination of field and management assignments in both small and large scale fire and explosion property losses, fire death and injury cases, product defects and liability cases, arson for fraud investigations, vehicle accident investigation and reconstruction, computer forensics, premises safety and security, and training & development solutions. Specific areas of expertise include primary responsibility for the direct management and supervision of cases where the origin, cause and responsibility of fires and explosions are at issue. These assignments involve residential, commercial, industrial, marine, off-shore production platforms, wind turbines, chemical and manufacturing plants and warehouses, heavy equipment, vehicles, product liability and injury/death related fires and explosions.

Consulting expertise includes evaluation of litigation related matters involving the case areas described above as well as explosions involving LPG, Natural gas, and high explosives, fire code and standards compliance, product and label warning evaluations, fire detection and response systems, computer fire modeling and simulation, investigation of fraud related fire incidents, computer forensics involving fire damaged systems, and vehicle accident investigation and reconstruction.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Post Graduate Studies – University of New Haven
Post Graduate Studies – Sam Houston State University
B.S. – Law Enforcement – Sam Houston State University
A.A.S. – Police Science – South Texas Junior College
National Association of Fire Investigators
International Association of Arson Investigators
International Association of Bomb Technicians & Investigators
National Fire Protection Association

EMPLOYMENT HISTORY

2005 – Present	Rimkus Consulting Group, Inc.
2001 – 2005	EFIGlobal, Inc.
1984 – 2000	Texas Investigative Consultants
1983 - 1983	Hicks & Sanchez Fire Investigations
1980 – 1982	Heliflight Systems
1976 – 1980	North Harris College
1971 – 1976	Texas Dept. of Public Safety
1969 – 1971	United States Army



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road SE, Suite 224
Atlanta, Georgia 30339
Telephone: (770) 436-9399

December 5, 2019

Re: RCG File No: 100018376
LLV Number: 1262491
VMF Location: 3900 Crown Road Atlanta, Georgia
Subject: Preliminary/Final Report

On October 28, 2019, a fire occurred in a US Postal Service vehicle at 8114 Taylor Street SW in Covington, Georgia. On November 1, 2019, we inspected the 1992 Chevrolet LLV 1262491 with VIN 1GBCS10A2N2900548, at the Atlanta Vehicle Maintenance Facility located at 3900 Crown Road in Atlanta, Georgia.

In the course of our work, inspected the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Gregory M. Cloer, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the fuel filter.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of an improperly secured fuel line connection at the bottom of the fuel filter. The improperly secured fuel line allowed atomized gasoline to escape

from the fuel line. The atomized gasoline was ignited by the hot surface of the exhaust system located below the fuel filter.

Observations

Exterior Inspection:

Inspection of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Fire movement patterns were observed extending from the mail side of the engine compartment extending to the passenger compartment and roof of the LLV. Most of the roof above the interior compartment and front sides of the interior compartment had been consumed during the fire event. The cargo compartment walls, roof, and rear door remained intact.

Interior Inspection:

Inspection of the interior of the vehicle revealed that most of the combustible materials within the interior compartment and the bulkhead had been consumed during the fire event. The rear cargo compartment remained intact.

Engine Compartment Inspection:

The engine compartment was inspected. The vehicle was equipped with a 2.5L engine. The vehicle was also equipped with a fuel injected throttle body and a high output ignition coil. The most severe fire damage was observed in the engine compartment along the mail side of the engine. The battery had sustained severe fire damage. The electrical conductors in the engine compartment were examined. There was no abnormal electrical activity noted on the electrical conductors within the engine compartment.

The engine oil and transmission fluid were examined and observed to be within their respective normal operating range. The fuel system was an AC Delco model.

Undercarriage Inspection:

Inspection of the undercarriage revealed no fire patterns extending from underneath the vehicle. The LLV was mounted on a GM frame and had sustained some damage to the left frame rail below the engine. This damage was consistent with the fire originating at the fuel filter and fuel lines. The engine fuel lines were located along the left side of the engine. The fuel filter was located on the left side at the rear of the engine. The fuel tank and fuel lines along the frame rail did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Inspection of the fuse panel revealed that it had sustained severe fire damage. All of the fuse panel combustible materials had been consumed during the fire. The electrical conductors and their connectors were observed with no abnormal electrical event. The fuse panel was eliminated as the origin of the fire.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was concluded that the fire originated in the engine compartment. The specific area of origin was at the fuel filter.

Potential Contributing Factors:

Improper securing of the fuel line to the bottom of the fuel filter could not be eliminated. The involved components were collected and sent to Technical Fire Manager David R. Meyers, IAAI-CFI in the Charlotte, North Carolina office for potential future analysis.

Evidence Collected:

Item A – Fuel Filter and Fuel Lines

Service Records:

After a review of the service records on the vehicle, no evidence of a prior fuel line problem was observed. The last PM performed on the vehicle was July, 2019.

Interview:

Reportedly, the carrier was operating the LLV at the time of the fire event. He has been a carrier for approximately one year. At approximately 4:45 P.M., he was stopped at a curb side box along Taylor Street when he heard a “pop” sound. He then observed smoke and fire venting from the engine compartment.

The carrier dismounted the vehicle and dialed 911 and then his immediate supervisor. The heat from the vehicle fire caused the vehicles emergency brake to give way and the vehicle rolled and rested in the middle of Hwy 36.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to

determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

David R. Meyers

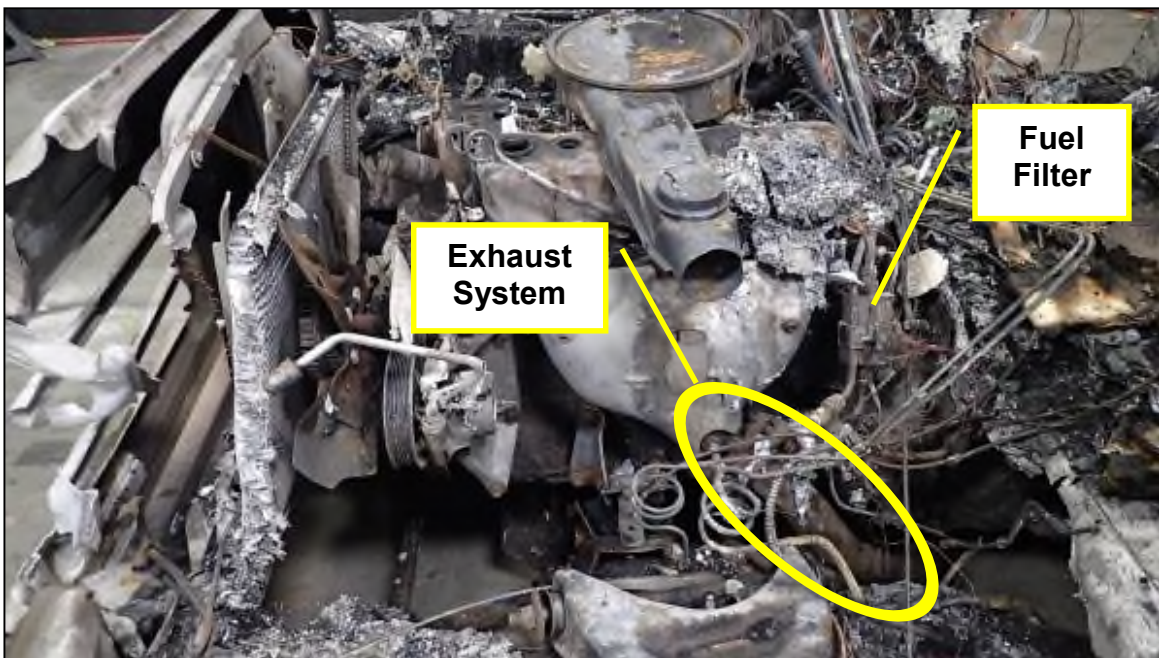
David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1
View of the exterior.

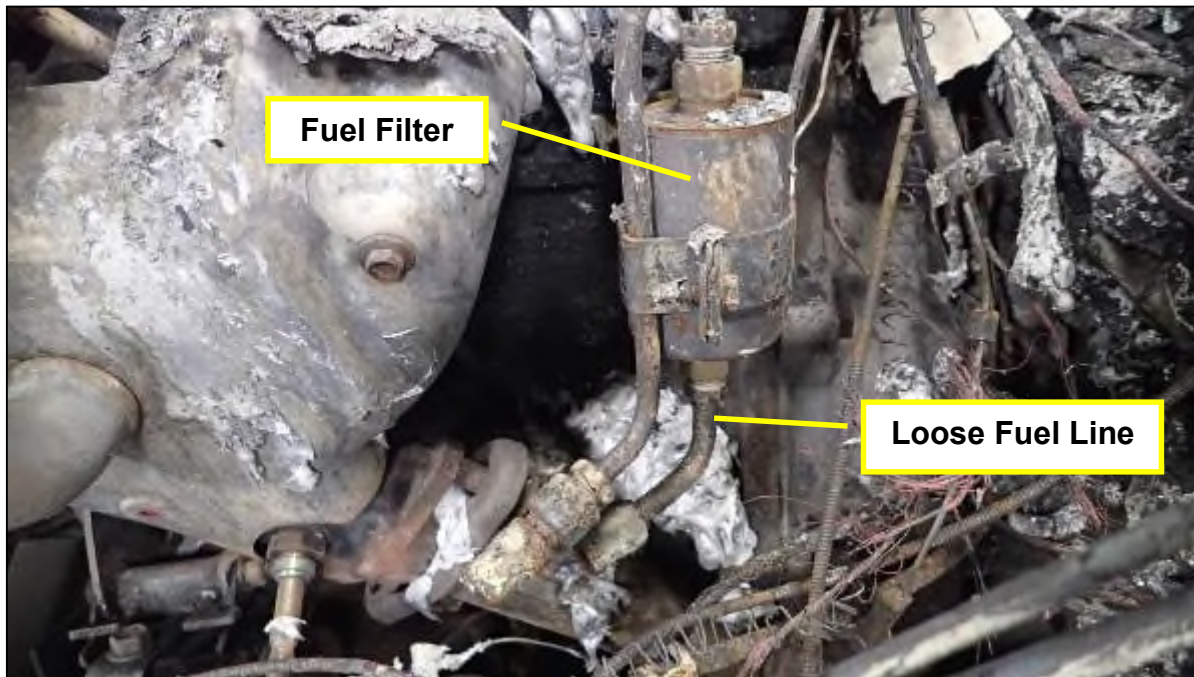


Photograph 2
View of the left side of the engine.



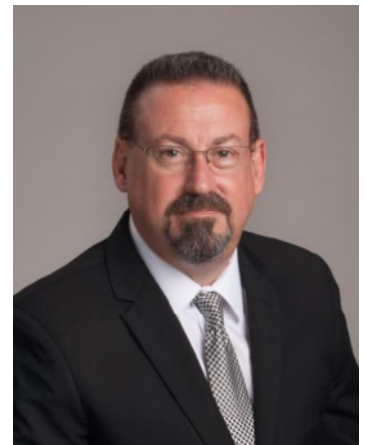
Photograph 3

View of the fuel filter.



December 5, 2019
Rinkus File No. 100018376

Curriculum Vitae



Gregory M. Cloer, CFI

Fire Consultant
Fire Division

Background

Mr. Cloer is a Certified Fire Investigator through the International Association of Arson Investigators and National Professional Qualification, a Certified Arson Investigator through Georgia Peace Officer Standards and Training Council (P.O.S.T.) and certified for fire/arson investigation through the National Fire Academy. He was certified by Georgia P.O.S.T. as a basic peace officer and served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting and prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator.

Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. He has testified as an expert in criminal and civil courts related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

Contact Information

(770) 436-9399

gcloer@rimkus.com

2030 Powers Ferry Road SE,
Suite 224
Atlanta, GA 30339



Rimkus Consulting Group, Inc.
1752 W 1180 S, Suite 8
Woods Cross, UT 84087
(855) 249-6568 Telephone
(385) 202-2633 Facsimile

June 13, 2017

Re: RCG File No:

	76400369
LLV Number:	1262517
VMF Location:	10108 S. Redwood Road in South Jordan, Utah 84095
Subject:	Preliminary/Final Report

Dear

On May 19, 2017, a fire occurred involving a US Postal Service vehicle in operation at 7901 S. 3200 West near West Jordan, Utah when the vehicle operator, parked the vehicle at the post office after completing her route for the day.

On May 23, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1991 Grumman Allied postal delivery vehicle LLV 1262517, VIN 1GBCS10A1N2900492. On May 30, 2017, we conducted a fire origin and cause examination on the vehicle at 10108 S. Redwood Road in South Jordan, Utah.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records, and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Dean B. Hunt, CFEI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be on the left side of the engine towards the rear and down at the bottom of the engine.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of ignition of either leaking or atomized gasoline fuel coming in contact with the hot surface area of the components in the area of the exhaust manifold.

Observations

Exterior Inspection:

For the purpose of this report, the left side of the vehicle refers to the mail side and the right side refers to the operator's side. There was no damage to the exterior of the right side or to the rear of the LLV. The left side was damaged from the fire at the front fender, above the front tire, along the top edge. We observed the windows on the left and right side had been damaged from smoke and heat on the inside. The front of the LLV was examined. The hood was damaged from heat and flame to the top half of the hood and the LLV body above the hood. This damaged was centered over the left rear of the hood.

The wheels and tires were intact. There was no evidence to indicate that the LLV had recently been involved in a collision. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

The interior of the LLV was examined. The rear compartment of the interior was damaged from heat and smoke. The front compartment was damaged from heat and smoke. Some of the plastic components of the dash were melted around the steering wheel. Insulation on some of the electrical conductors had been consumed by the fire; however, most of the conductors still had insulation intact. The heater blower fan had fallen to the interior of the LLV on the left side. There was no physical evidence observed on the interior of the LLV that would have caused or contributed to the cause of the fire.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine. Both sides of the engine were damaged by the fire. The right side still had rubber hoses unburned from the fire and intact. Damage to the engine compartment became more severe from the right side towards the left rear of the engine. This damage at the left rear of the engine was more extreme towards the

bottom of the engine. The underside of the hood above the left rear side of the engine was damaged from heat and flame. Paint on the underside of the hood and centered over the left rear of the engine had been consumed by the fire in the area of the left rear of the engine were metal fuel lines. The rubber fuel lines that were attached to these metal fuel lines had been consumed by the fire. The rubber fuel lines were located over the left rear of the engine compartment. The engine oil dip stick indicated the crankcase was full of oil. There was no indication of any oil leak from the engine. The fuel system was the GM model.

The battery for the vehicle was located at the front right side of the engine compartment and had severe external fire damage. The battery, the battery terminals and battery cables were examined and found to be intact with thermal damage only, no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range. The carburetor was examined and observed with minor fire damage to the top portion of the carburetor where the air filter housing was mounted.

Based on the fire patterns observed, the left side of the engine within the engine compartment was determined to be the area of origin.

Undercarriage Inspection:

The undercarriage of the LLV was examined. The exhaust pipe extended from the exhaust manifold down to the bottom of the engine and then transitioned to the right side of the engine just in front of the oil pan. The exhaust pipe was damaged from direct flame impingement along this transition. The paint on the front of the oil pan which is parallel to the exhaust pipe is burned off. At the bottom of the exhaust pipe where the transition begins, a circular pattern that is consistent with a liquid puddling and then dripping from the exhaust pipe was observed.

Fuse Panel Inspection:

An examination of the electrical fuse panel was conducted. There was no heat or flame damage to the fuse panel. The electrical conductors to and from the fuse panel were all intact with the insulation still intact.

Area of Fire Origin:

The area of fire origin was the left side of the engine towards the rear and down at the bottom of the engine.

Contributing Factors:

Based on the remaining physical evidence, the most probable cause of this fire was from either leaking or atomized gasoline fuel coming in contact with the hot surface area of the components in the area of the exhaust manifold. The rubber fuel lines that had been consumed by the fire were over the area of origin. The most severe damage to the LLV was at the left rear, bottom of the engine. The exhaust pipe extending from the exhaust manifold to the catalytic converter was located in this area. The LLV had been parked for approximately 1 hour prior to the fire. Online research indicated that a catalytic converter and exhaust pipe between the catalytic converter and engine continues to generate heat for 45-60 minutes after a vehicle is shut off. The burn pattern observed on the exhaust pipe and oil pan were consistent with liquid pooling on the bottom of the exhaust pipe.

Evidence Collected:

No physical evidence was collected.

Interview:

The driver was interviewed over the phone. She stated that she had the LLV for one week since the flywheel had been replaced. She did not notice anything out of the ordinary. She reported that she did not smell gasoline, nor did she observe any puddling of liquids under the LLV. She has driven this LLV for the last 17 years and that it was running the same as it always had. There were no problems with it the day of the fire. She stated that she had parked the vehicle at the post office after completing her daily route at approximately 3:50 PM.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Dean B. Hunt

Dean B. Hunt, CFEI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

June 13, 2017
RCG File No. 76400369

Photograph 1
Front hood of LLV.



Photograph 2
Underside of hood.



Photograph 3

Burn pattern on exhaust pipe and oil pan.



Photograph 4

Liquid pooling and dripping pattern on bottom of exhaust pipe.



June 13, 2017
RCG File No. 76400369

CVs



DEAN B. HUNT C.F.E.I. FIRE CONSULTANT

Mr. Hunt is a graduate from Grand Canyon University with a Bachelor of Science degree in Public Safety and Emergency Management. His experience and knowledge covers over 30 years in the fire service with the last 19 years working as a full time Fire Investigator and Fire Marshal. He is a Certified Fire and Explosion Investigator (C.F.E.I.) through the National Association of Fire Investigators as well as a Certified Fire Inspector II with the International Code Council (ICC). Mr. Hunt is experienced in the interpretation and enforcement of the International Building Code and the International Fire Code as it relates to fire, life safety and egress in existing buildings and new construction as well as with fire protection systems.

In addition to over 600 fire investigations, Mr. Hunt has conducted over 200 live fire training tests utilizing modern furnishings and materials. These tests were conducted for the purpose of studying the effects of varying structural and atmospheric conditions as well as the effects of fire protection systems. This has helped him to gain a better understanding of how these varying conditions affect the growth and progression of fire as well as the patterns that are left behind after a fire has been extinguished.

Mr. Hunt has extensive experience in public speaking as well as presenting at both national and local conferences including the National Fire Protection Association (NFPA) Conferences and Vision 20/20 Symposium of Model Programs of Fire Prevention. He has also been recognized for his Fire Prevention Programs in National Fire Academy publications and courses as a 'model program' in Fire Prevention.

Mr. Hunt has been involved in photography both as a hobby and professionally for 40+ years. This experience has given him experience with both modern and past photography equipment and techniques.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. Public Safety and Emergency Management – Grand Canyon University, Phoenix Arizona
Certified Fire and Explosion Investigator – National Association of Fire Investigators (NAFI)
Certified Fire Inspector II – International Code Council (ICC)
International Association of Arson Investigators, Utah Chapter – Member
National Association of Fire Investigators – Member
International Association Fire Chiefs – Member
International Fire Marshals Association – Member
Utah Fire Chiefs Association – Member
Fire Marshals Association of Utah – Member

EMPLOYMENT HISTORY

2016 – Present	Rimkus Consulting Group, Inc.
1997 – 2016	Layton City Fire Department
1994 – 1997	Utah Office of the State Fire Marshal
1989 – 1994	Utah Bureau of Emergency Medical Services



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
13900 Alton Parkway, Suite 123
Irvine, California 92618
Telephone: (877) 978-2044

November 18, 2019

Re: RCG File No: 100008264
LLV Number: 1262872
VMF Location: 28081 Marguerite Parkway Mission Viejo, California 92692
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to conduct a fire origin and cause analysis on a fire that occurred on July 2, 2019, involving USPS LLV 1262872, with VIN 1GBCS10AXN2900913. The vehicle was identified as a 1992 Chevrolet, 3-door cargo style van manufactured at the Moraine, Ohio plant operated by General Motors, Inc. The vehicle was a rear-wheel drive, postal service delivery vehicle powered by an L4, 2.5 liter gasoline engine with an automatic transmission, hydraulic brakes, and throttle body fuel injection (TBI). The last preventative maintenance inspection was completed on June 18, 2019. The last documented repairs were completed on May 9, 2019.

The vehicle fire incident occurred on Interstate 5-North near the Junipero Serra Road exit in San Juan Capistrano, California, just after 6:00 P.M. The driver at the time of the incident was USPS employee, Mr. Jesus Flores. The vehicle was examined at the Postal Facility located at 28081 Marguerite Parkway in Mission Viejo, California. The vehicle had been moved to the northwestern parking area of the Vehicle Maintenance Facility (VMF).

Our work to complete this assignment was conducted by fire consultant Mark S. Fields, IAAI-CFI, on July 16, 2019. During our investigation of the fire, we conducted an examination of the fire damaged vehicle and documented the vehicle with digital

photographs. A technical review of this report was completed by Eastern Fire Division Manager David R. Meyers, IAAI-CFI (V).

During the work, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standards for Professional Qualifications for Fire Investigator."

Conclusions

1. The fire originated in the engine compartment on the mail side of the LLV.
2. The specific area of origin could not be conclusively identified due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severe fire damage and the lack of remaining physical evidence for examination; however, a failure event of a freeze-out plug could not be eliminated.

Observations

Exterior Inspection:

In order to consider the origin and all possible fire causes, the vehicle was examined from the areas that were least damaged to those most severely damaged with considerations of fire dynamics, ventilation, fire load, and other contributing factors.

Initial inspection of the vehicle revealed that the vehicle had been covered with tarps and cardboard. These efforts were made by VMF personnel to minimize onlookers and eliminate tampering with the vehicle.

There was no visible, physical evidence of body damage that would indicate this vehicle was involved in a recent collision. This inspection was limited to areas where no related fire or heat damage was noted.

There were no license plates mounted on the vehicle.

The vehicle was equipped with four rims and tires. The three wheels and tires on the vehicle at the time of fire appeared to meet manufacturer's specifications for the vehicle- the R-front, the R-rear, and the L-rear. The L-front tire had visible fire and heat damage and was no longer intact. The rim had visible fire and heat damage and was warped along the interior rim edge. The three remaining tires were manufactured by the Goodyear Tire Company. The R-front tire was flat.

The fuel door exterior was observed with no fire damage, and the fuel cap was intact. The filler neck appeared tight and intact. There was soot and smoke residue on the fuel door interior and the area around the filler neck.

The hood, all glass panes, L-front quarter panel, and driver cab were missing or otherwise consumed. Large, masses of aluminum colored metal were located in the debris piles within the cargo area. A large, uneven and inverted "V" type pattern was visible in the roof section. The widest portion of the "V" was at the cab driver area, was more offset to the L-portion of the roof and extended the distance of the roof to the rear cargo door.

The right-side front quarter panel was mostly intact but had visible heat and fire damage to the metal and paint layers extending downward and back towards the driver area. The door was physically intact but had fire and heat patterns on the front areas extending vertically from top to bottom of the door. There was a separate fire pattern on the door below the missing window- the pattern extending downward in a "U" shape and had consumed much of the paint layers.

There was smoke and soot residue in the right-side door track mounted into the roof eave behind the door. Below this pattern was a circular area where the USPS eagle logo and paint layers were missing to the bare metal. There were no corresponding exterior heat or fire patterns. There were smoke, soot, heat, and fire patterns visible around the right-side open vent on the upper corner of the rear body panel.

The rear bumper had no visible heat or fire patterns. The corrugated step plate above the bumper had some visible debris consistent with "drop down" from consumed items or paint. The bottom cargo door panel had some smoke and soot patterns around the lock and pull-handle mechanism. There was also a broad and shallow pattern in this area that extended upward to the door panels above. The rear door panel above was

warped/deformed, causing a visible gap between this panel and the panel above. There was a visible "V" type pattern beginning at this gap- it extended upward and outward across the remaining cargo door panels to the roof. The next two panels above had lesser, yet visible warping/deformation. There were uniform layers of soot and smoke residue on the exterior of the cargo door panels that extended upward to the roof. The left and right rear panels had no visible fire, heat, smoke, or soot damage; the light covers had no visible heat effects (melting, distortion). There was a small, circular area of paint missing above the top most brake light.

The left side panel had visible warping and paint missing to the bare metal from an area just in front of the upper corner air vent that extended forward and outward. The paint was missing from the door track to the bottom edge of the wall panel. This was possibly consistent with clean burn patterns that continued onto the surface of the access door. There was visible smoke and soot residue on the upper right corner of the door. The window glass was missing, and the lower part of the door frame was also missing- a "V" type pattern began at the lower portion of the door (at or near cabin floor level) and extended upward and outward to the sides of the door. There was a corresponding boundary of missing paint down to the bare metal with this pattern. Most of the L-front side and quarter panel areas were missing or consumed. A small portion of the lower panel was intact.

The front bumper was intact but there were visible fire and heat patterns to the exterior. The covering had been consumed or gone through phase changes (solid to liquid) from the left side to an area near the right head-light. The cover material was warped, massed, and exhibited fire effects of melting and burning. The remaining metal bumper had color discoloration of gray/silver/white from the left side to an area of black that corresponded to where the bumper covering had warped and massed. In the middle area of the bumper, there was a portion of the bumper missing and the metal bumper had fractured into two sections. The right side had melting and beading effects from the bottom and extended upward to the top area of the bumper. The left side had fracture patterns consistent with post-fire mechanical activity (pulling, towing, or lifting)

Interior Inspection:

Examination of the rear cargo area revealed the door was locked, and visible heat and fire patterns were observed on the interior surfaces of the cargo door (with

warping/deformation of the panels as previously described). There was a visible volume of burned/partially burned coupons/colored flyers in the cargo area. An interview with the listed carrier revealed several bins of flyers and a tray to tray and ½ of mail or packages were inside the cargo area at the time of the fire. The interior walls and roof (a substantial portion) were consumed or melted, exposing cross member braces within the double walls and roof. The power steering pump, heater motor, fan blade, L-front head light, and a filter were located within the debris of the cargo area.

The power steering pump had some damage to the exterior and cast mounting points showed brisance. The high-pressure line was still attached and there were remnants of hose material inside the attachment opening.

The heater motor was heavily oxidized and visible patterns were consistent with an exterior fire that moved into the component. There was no visible, adverse electrical activity.

The fan blade had small amounts of alloyed material randomly attached to the blade edges. The shaft attachment was broken due to brisance- there were heat and fire patterns on both surfaces of the blades.

The L-front head light was mostly intact- the lens cover was broken but the bulb was present and there was no visible fire or heat damage inside the bulb area. There were visible fire and heat patterns on the exterior of the lower half- this indicated this component was exposed to a heat source behind and to the rear of its mounted location.

The filter was of similar size to a commercial truck/light truck transmission filter. The exterior had heavy oxidation and fire patterns and no visible markings were available.

The driver's seat, driver's service table, and dashboard were all consumed- only the metal seat frame, steering wheel shaft, metal face plate for the gauges, and other metal components remained. The alternator was located on the driver side step deck. The windings appeared intact with no adverse electrical activity. There was some brisance to the mounting points and some exterior damage to the housing consistent with exterior fire moving into the component.

Engine Compartment Inspection:

Examination of the engine compartment revealed severe and substantial damage to the entire compartment.

The battery casing was missing or consumed. The interior cells had visible fire damage with loss of mass. The terminal nodes were also missing. The metal portion of the battery cables and terminal connectors were present and intact. Visible heat and fire patterns were consistent with an exterior fire moving into the battery cells, but there were no visible effects of any adverse electrical activity present.

The right interior wheel well was still present and had visible, moderate smoke, fire, and heat damage to the surfaces around the battery, below the master brake cylinder, and other nearby components. One of the brake line attachment collars was partially unscrewed and off-center from the screw well. There were visible fire or heat effects observed on this component indicating an exterior fire moving onto the exterior of the component.

Metal components extending from the driver's compartment and dashboard (steering linkage, wire bunches, circuits, brake lines) on the right side of the engine had visible heat, oxidation, and fire damage. Some portions of non-metal hoses were still present. The fan housing behind the radiator and fan blade were missing or consumed.

The right side of the radiator was partially present; visible heat and fire effects indicated heat from a source above that extended downward onto the exterior surfaces, exposing the transmission cooler blade/trunk. The loss of mass created a partial "V" pattern that extending downward towards the damaged area of the front bumper. The remainder of the radiator was missing or had been consumed during the fire incident.

The air filter cover was loose: the mounting screws and bolts were missing. The metal screen portion of the air filter was still in place and some corresponding debris encircled most of this screen within the air filter housing. There were no non-metal components present. The throttle body injector module underneath was inspected and revealed some heat effects on the exterior and smoke/soot deposits on the interior walls. This component appeared to be functioning properly and there were no visible fire patterns around this component.

The oil cap was missing- inspection of other, similar engines indicated much of this component was cast metal. Based on maintenance records it is highly improbable that this vehicle was operated for at least 11 days, without an oil cap being present, before some malfunction or fire incident occurred. It is more likely that the non-metal components were consumed; causing the metal component to fall into the engine block or to become dislodged during fire suppression activities. Daily operation of this vehicle would have typically caused maintenance issues with the engine before 11 days.

Inspection of the fan blade shaft revealed residue present on the shaft and hub in front of the manifold. Part of the residue was consistent with fan belt material.

The oil dipstick was removed, and the oil level evaluated. Based on the observed level it appeared that the oil level was within normal volume according to the manufacturer's recommendations. The color of the oil indicated severe heat exposure during the fire incident (sludgy mocha color). An examination of the oil filter and oil filter gasket revealed no visible damage or leaks. The oil filter was intact, had visible fire and heat damage to the exterior casing with impingement into the seam where the filter was mounted onto the block.

Inspection of the left side of the engine compartment revealed the most severely damaged areas. The front freeze plug on the engine block was missing. Inspection of the bodies and mounting brackets to the water pump and power steering pump revealed signs of brisance and discoloration. The remaining metal components within this portion of the engine compartment showed effects from heat and fire down to the lower frame members and remainders of the L-wheel assembly components. The heater control cable and heater valve were still intact: there were visible signs of heat and fire effects on the cable and exterior valve body. There were similar fire effects on the metal "flapper" previously inside the heater duct that was mounted in the upper left front area of the engine compartment.

The remains of the heater coil were located in a mass under the remains of the L-front wheel. There was oxidation and discoloration to the coils- there were also several holes with black residue in different areas of the coil. Most of the holes were on the same side of the coil and aligned diagonally across the surface of the coil tubes. The remains of the heat frame/duct mount were still visible in the remains of the upper left engine compartment.

Undercarriage Inspection:

The inspection of the rear and middle undercarriage areas revealed no fire or heat damage to the transmission, exhaust, or fuel systems. There was a small, oval area on the left, upper rear exterior of the gas tank where the protective coating was missing. There was some oxidation to the rear springs and lower portions of the chassis members consistent with normal road travel exposure.

The inspection of the front undercarriage area revealed fire and heat damage to chassis, strut, lower engine, and exhaust areas. The fire and heat patterns were consistent with pooling of liquids, fuels in changed phase state that gathered under the engine compartment, or drop down debris at or near ground level that were located under the engine compartment or front end.

Fuse Panel Inspection:

The fuse panels were consumed during the fire. Circuits from the panel were visible in the area of the remains of the driver's area. The remains of the metal connectors and conductors did not have any visible effects of adverse electrical activity.

Area of Fire Origin:

Based on fire dynamics, fire patterns, maintenance records, and other available information, the area of origin was at or near the left side of the engine block between the freeze plug, power steering pump, and lower fuel lines that were attached to the bottom chassis members.

The carrier stated the vehicle was functioning with normal limits- he did not observe, hear, feel, or smell any indicators of poor vehicle performance. This vehicle was used by him almost daily. He did not observe any overheating, electrical issues, warning lights, or other indicators of malfunctions. He stated he heard a loud noise and he lost the ability to accelerate and then had to pull over off the interstate. He then saw smoke coming from under the hood. This most probably was attributed to a broken serpentine belt or timing belt. The sudden breaking of one of these belts can cause bent valves (most common), cylinder head or camshaft damage, possibly piston and cylinder wall damage, or physical damage to other components outside the engine block (fan, power steering pump, reservoir, brake lines, etc.). If the fan stops working this leads to the

engine overheating. Any damage to any parts of the engine most probably caused an oil leak (valve cover leak, freeze plug leak or failure, gasket head leak) onto a hot surface, causing a fire to occur.

The close proximity of the power steering pump and reservoir could have caused a release of power steering fluid into the engine compartment, allowing for a hot surface ignition. This is also true of the brake lines extending through this part of the compartment. If a smoldering fire had already begun, the release of this or other available flammable or combustible fluids would cause the fire to accelerate from smoldering to open flame ignition throughout the compartment.

Another potential specific ignition sequence was a leaking fuel line on that side of the engine. A small leak from the connecting hoses could cause vaporization of the fuel leaking into the compartment. This increases the surface area of the fuel vapor, increasing the likelihood of a hot surface ignition on the heat shield or manifold.

The operational temperature range of most car engines is 195-220 degrees F. The measured temperature range of heat shields and exhaust manifolds of most vehicles is 900-1200 degrees or more. The ignition temperature range of the above fluids is 500-775 degrees F (oil is 500-700; power-steering fluid is 500-700; brake fluid is 540-675; anti-freeze is 725-750; gasoline is 536-853).

Potential Contributing Factors:

1. The first potential factor was the age of the vehicle and engine. The odometer reading was 188,402 miles in June 2019. It has been documented that this type of USPS vehicle has been kept in service past the intended life expectancy of usage. The longer an engine operates increases the probability of major internal damage as parts wear out. This possibility is increased if a vehicle is operated daily by multiple drivers with different driving styles. A review of maintenance records for a year indicated progressive maintenance was completed every six months to decrease major engine damage from occurring.
2. The second potential factor was a worn/damaged hose or line that resulted in an undetected leak. The most common causes of vehicle fires (limited ignition sources) are fuel/fluid leaks, electrical issues, overheating engines, theft/arson, and

improper/poor maintenance. All potential ignition sources were eliminated regarding the cause of the fire except for a fluid leak.

3. The third potential factor was a damaged freeze plug. The freeze plugs are cast out of brass. The melting point of brass begins at 1650 degrees F. The missing freeze plug was most probably mechanically damaged, causing the component to fail (dislodge from the engine block). Maintenance records on this vehicle did not show that any freeze plugs had been replaced on this vehicle. The replacement freeze plugs in VMF inventory had markings indicating they were cast in China. If any plugs have been replaced in this or other vehicles, it is suggested that data sheets be reviewed (and possible metallurgical testing be performed) on these plugs to ensure the quality of these replacement parts.

Evidence Collected:

No evidence was collected.

Service Records:

The last preventative maintenance inspection was completed on June 18, 2019. The last documented repairs were completed on May 9, 2019.

Witness Statement:

The driver at the time of the incident was USPS employee. He stated he was traveling at approximately 55 MPH when he heard a "pop" from the engine. He then saw smoke coming from the engine compartment. By the time he stopped there was fire in the engine compartment. He stated the vehicle was operating fine prior to the "pop".

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Mark S. Fields

Mark S. Fields, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

November 18, 2019
Rimkus File No. 100008264

Photograph 1

Looking northwest- status of vehicle on date of inspection.



Photograph 2

Looking northwest- remains of vehicle after coverings removed.



Photograph 3

Front and ride side of vehicle.



Photograph 4

Right side and rear of vehicle.



Photograph 5

Rear of vehicle showing damage to door and fire patterns.



Photograph 6

Rear door and rear of left side of vehicle.



Photograph 7

Forward portion of left side and engine compartment of vehicle.



Photograph 8

Remains of roof and interior compartments of vehicle.



Photograph 9

Gas access door, gas cap, and gas spout of vehicle.



Photograph 10

L-rear undercarriage area showing general oxidation to leaf springs.



Photograph 11

R-rear undercarriage area showing general oxidation to leaf springs.



Photograph 12

Middle area of the undercarriage showing some oxidation under vehicle.



Photograph 13

Front area of undercarriage, flooring support, exhaust, and drive train systems.



Photograph 14

Remains of engine compartment, front bumper, and driver interior.



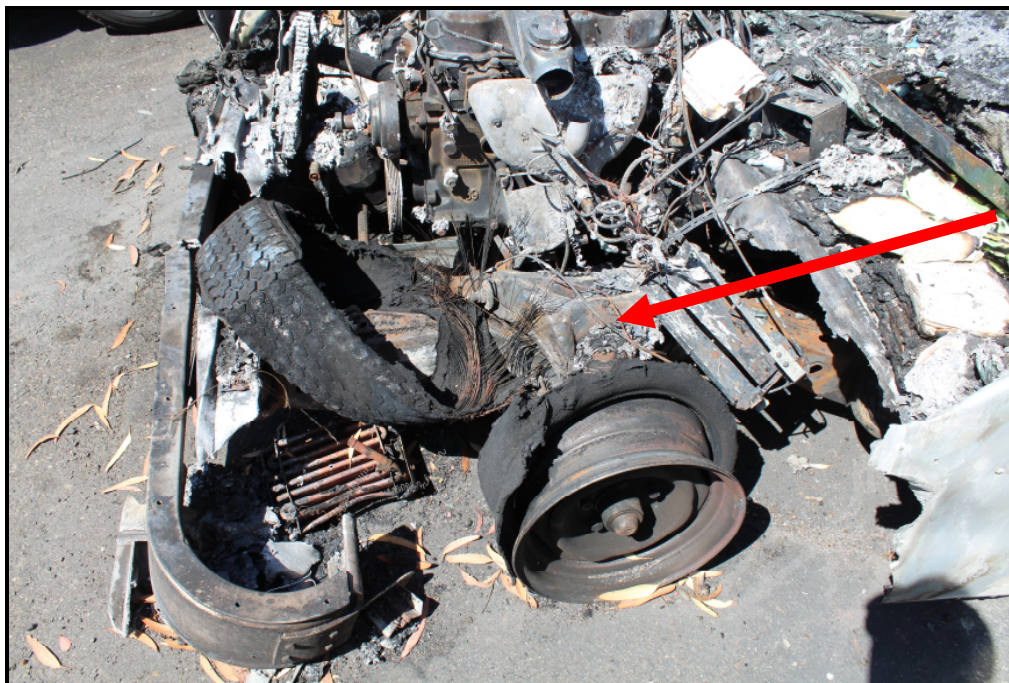
Photograph 15

Comparative photo of same vehicle year, type of engine, compartment layout.



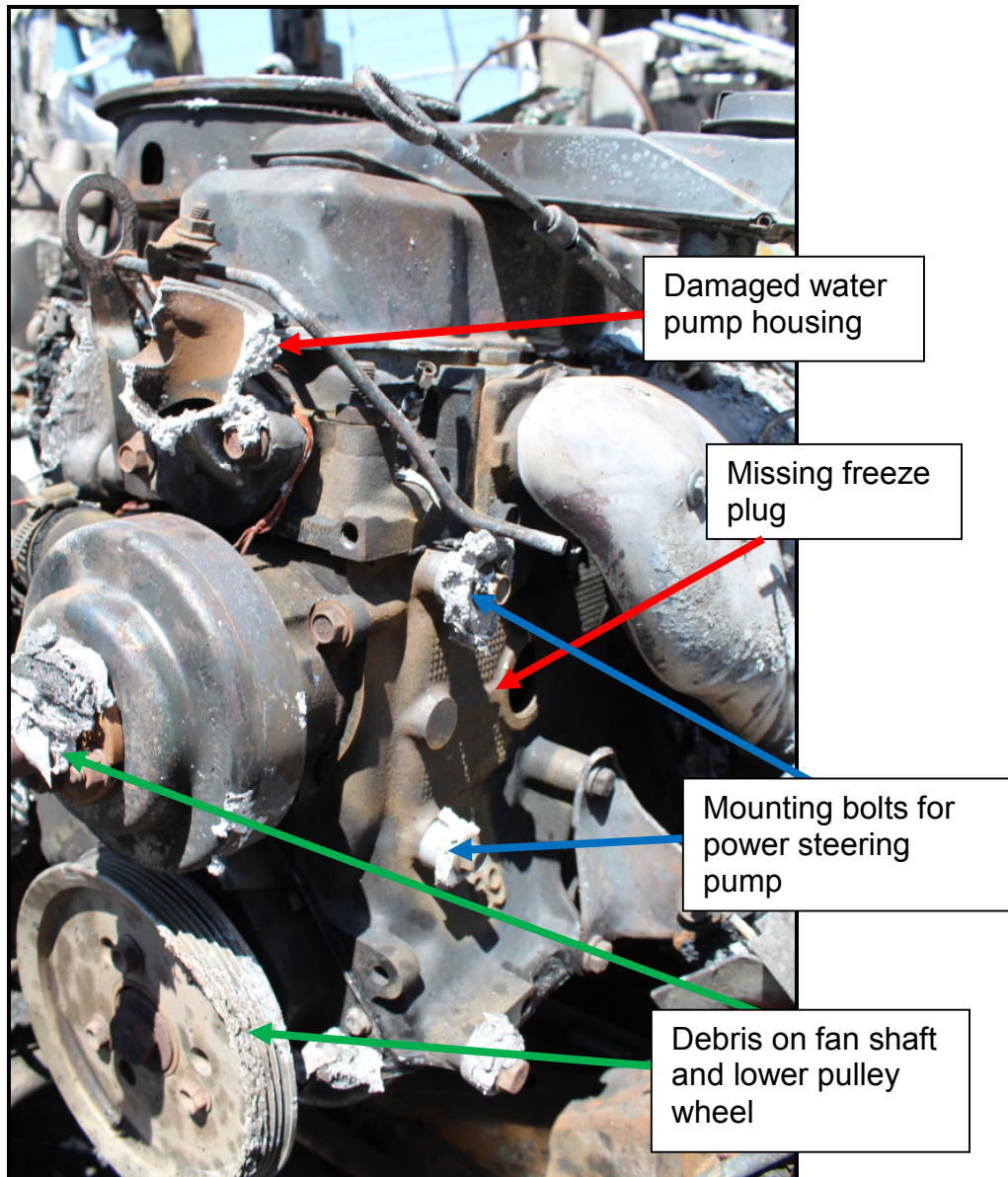
Photograph 16

View of remains of L-side engine compartment. Arrow indicates heater coil.



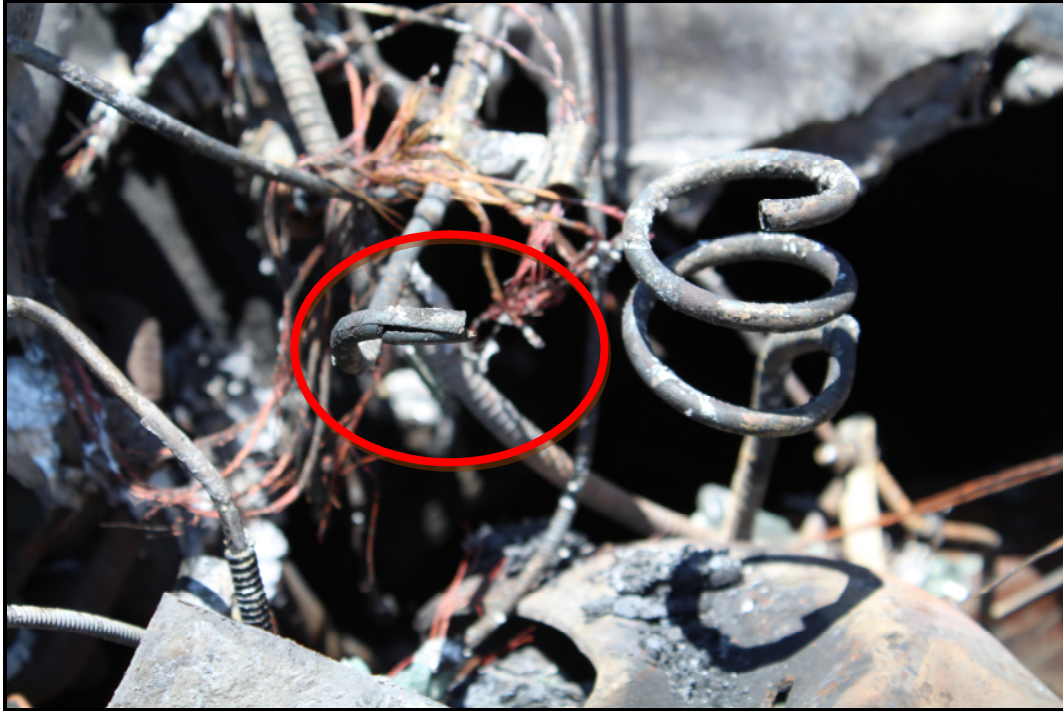
Photograph 17

L-side of engine showing noted issues, components.



Photograph 18

Line with horizontal fracture near conductors and other detached line.
Engine block is to the left of this component.



Photograph 19

Close up photo of break in line with separation from other end.



Curriculum Vitae



Mark S. Fields, CFI, CFEI

Fire Consultant
Fire Division

Background

Mr. Fields is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and Certified Fire and Explosion Investigator (NAFI-CFEI) with the National Association of Fire Investigators.

He received a national certificate from the U.S. Army Weapons Intelligence Course. He also received a state certificate in Crime Scene Technology from the Virginia Forensic Science Academy. Mr. Fields has personally worked over 300 fire and explosion investigations.

Mr. Fields has acted as an expert witness in traditional forensic topics.

His forensic experience includes investigations of fire and explosion incidents in industrial, commercial, residential structures, vehicles, and boats/vessels. His areas of expertise include fire scene analysis, evidence/data collection, post-blast investigations, investigative interviews, scene photography, and evidence facility management.

Professional Engagements

- Fire/Bomb Investigations
 - Forward Deployed Laboratory – Afghanistan (2011), As photographer and forensic processing technician, processed evidence in post-blast investigations/IED incidents for fingerprints, DNA, and trace evidence. Photographed viable latent prints and other evidence for identification purposes. Worked with Explosive Ordinance Disposal (EOD) from U. S. Army, U.S. Navy, and foreign military units. Trained in facial recognition, iris recognition, and latent print examination on cases with trained personnel.
 - Fire Origin and Cause – Charlottesville, VA (1992-2010), Responsible for the determination of the origin and cause of 100+ fires, both incendiary and accidental, working with fire marshals from Albemarle County, City of Charlottesville, Virginia State Police, and U.S. Department of Treasury Bureau of Alcohol, Tobacco, and Firearms agents.
- Education/Training
 - Mobile Training Team (MTT) – U.S. military installations (2010-2013), Instructed U.S military students throughout various military installations about best practices and techniques in forensic investigations

Contact Information

(714) 954-1912

mfields@rimkus.com

13900 Alton Parkway, Suite
123
Irvine, CA 92618

including forensic photography techniques, known/latent print impression collection, DNA collection, report writing, intelligence/evidence collection, and improvised explosive device (IED) components/post blast investigations. Techniques relied on actual IED components and devices (minus the explosives) during instruction. When working as an instructor for The Weapons Intelligence Course (WIC), the team blew up at least two cars a class, military munitions in ground-based detonations, and completed post-blast investigations on the cars.

- Expert Witness Testimony
 - Charlottesville, VA (2009), Circuit Court: Commonwealth V Shifflett, Sexual Assault, (Qualified as Expert in Forensics)
 - Charlottesville, VA (2009), 14th Street NW & Wertland Street apartment fire (arson involving pyrotechnics, improvised explosive devices), Deposition for civil trial.

Forensic Engagements

- Fire Origin and Cause
 - West Covina, CA (2019), Investigated residential fire. Determined specific ignition sequence and cause of the fire to be the result of an unspecified failure of the electrical system involving an open/floating neutral within the ungrounded, 110 V electrical system. Electrical energy contacted wooden framing members in the attic area, causing low temperature heating until ignition temperatures were reached and the fire spread to surrounding combustible materials.
 - Inglewood, CA (2019), Residential fire that originated at or near floor level, several feet inside the garage space, and near the west wall interior. It extended near a framed doorway and continued toward the south wall. Several potential ignition sources were identified in the garage including: open flame ignition devices, careless disposal of smoking materials inside the space due to recent living activity, accidental ignition of combustible materials related to recent drug use, resistance heating of electrical extension cords that extended from an adjacent garage space (“piggy backing of power”), and an incendiary fire with human involvement.

Professional Experience

- Rimkus Consulting Group, Inc. 2019 – Present
 - Fire Consultant – Fire Division
Conduct fire and explosion investigations in industrial, commercial and residential structures, vehicles, and boats/vessels. Assess potential for possible subrogation or liability concerns. Fire scene analysis, evidence and data collection, monitoring of destructive and nondestructive testing. Conduct investigative interviews and scene photography. Prepare detailed reports pertaining to the origin and cause of fire or explosion events.
- Unified Investigations & Sciences 2016 – 2019
 - Fire Investigator
Conducted fire and explosion investigations related to industrial, commercial and residential structures,

vehicles, and boats/vessels. During investigations, has assisted clients with assessing the potential for possible subrogation. Completed fire scene analysis, evidence and data collection, conducted investigative interviews and scene photography/documentation. Prepared detailed reports pertaining to the origin and cause of fire or explosion events. Additional responsibilities included management of southern California evidence facility, related record keeping and data entry.

- General Dynamics Information Technology 2013 - 2016
 - Senior Forensic Training Specialist
Assigned to training teams that instructed foreign and U.S. military students related to U.S. Army doctrine. Completed team leader, assistant team leader, and facilitator assignments with students during assigned classes. Instructed and tested students in forensic and biometric topics (DNA, photography, fingerprint processing/collection, materials collection/IED introduction, post-blast investigation, documentation/chain of custody, and processing of cell phones, computers, and other media sources for intelligence using designated software and hardware packages). Instruction consisted of classroom and multiple practical exercises. Completed Certified Computer Forensic Examiner (CCFE) course as part of instructor assignment for Weapons Intelligence Course. Maintained course material for site exploitation, report writing, and cell phone/computer blocks of instruction. Completed Master Instructor level through U.S. Army Instructor Curriculum.
- Six 3 Systems, Inc. 2010 – 2013
 - Senior Instructor/Forensic Technician/Photographer
Assigned to Mobile Training Team (MTT) for instructing U.S military students throughout various military installations. Instructed and tested students in photography techniques, known/latent print impression collection, DNA collection, report writing, intelligence/evidence collection, and improvised explosive device (IED) components/post blast investigations. Trained with Weapons Intelligence Course personnel on specified trainings. Completed new lesson plans and maintained other documentation related to training missions. Completed monthly, quarterly, and annual training reports. Completed deployment to Afghanistan during 2011 as photographer and forensic processing technician in a forward deployed laboratory.
- Charlottesville Police Dept. 1992 – 2010
 - Forensic Unit Detective/Police Officer
Assigned as Forensic Unit detective in 2001. Investigated and reviewed all death cases; involved in all major crimes/traffic incident scenes. Processed evidence “in house” on cases as requested for fingerprints, DNA, and trace evidence. Involved in quarterly, annual evidence/property audits and completion of related reports. Proficient in the use of interview and interrogation techniques, crime scene preservation, crime scene search techniques, evidence collection and packaging, report generation (oral and written), crime scene photography, search and seizure laws, expert courtroom testimonial procedures, forensic procedures, and crime scene diagramming. Responsible for the determination of the origin and cause of 100+ fires, both incendiary and accidental, working with city, state and federal agencies. Assisted the City of Charlottesville Commonwealth Attorney’s office in the prosecution of

criminal offenses, including those involving fire and/or arson. Graduate of the Virginia Forensic Science Academy in November 2006. Additional training in forensic anthropology/covert burial investigations.

As a uniformed police officer, was assigned to a patrol sector on evening and daylight patrol shifts. Initiated or responded to traffic accidents/criminal calls for service. Issued traffic summonses, criminal summonses, or completed arrests in more serious traffic and criminal incidents. Additional responsibilities include Field Training Instructor (FTI) with new officer recruits and police academy graduates. Selected as a patrol evidence technician that responded to crime scenes, serious vehicle accidents, and industrial accidents. Trained in interview and interrogation techniques, crime scene preservation, crime scene search techniques, evidence collection and packaging, report generation, crime scene photography, search and seizure laws, forensic procedures (blood detection, shooting scene reconstruction, etc.) and crime scene sketching.

Education and Certifications

- Certified Fire Investigator: International Association of Arson Investigators (IAAI)
- Certified Fire and Explosion Investigator (CFEI): National Association of Fire Investigators
- Virginia Forensic Science Academy (2006)
- Master Instructor: U.S. Army Instructor Curriculum
- California Conference of Arson Investigators
- Virginia Forensic Science Academy Alumni Association

Continuing Education

- CFITrainer.net
 - Fundamentals of Residential Building Construction, April 2019, 3 hours (tested)
 - The Scientific Method for Fire & Explosion Investigation, Feb. 2018, 3 hours (tested)
 - Preparation for the Marine Fire Scene, Nov. 2017, 4 hours (tested)
 - Fire Protection Systems, Nov. 2017, 3 hours (tested)
 - National Fire Protection Association 921 & National Fire Protection Association (NFPA) 1033, 2014 Edition- Application of Important Revisions, Nov. 2017, 3 hours (tested)
 - Evidence Examination - What Happens at the Lab, Nov. 2017, 4 hours
 - Fire Chemistry, November 2017, 3 hours (tested)
 - Writing the Initial Cause & Origin Report, Nov. 2017, 3 hours (tested)
 - Ethics and the Fire Investigator, Nov. 2017, 3 hours (tested)
 - NFPA 1033 and Your Career, Nov. 2017, 2 hours (tested)
 - The Practical Relationship Between NFPA 1033 and NFPA 921, 2 hours (tested)
 - Introduction to Evidence, Sept. 2017, 4 hours (tested)
 - Investigating Motor Vehicle Fires, April 2016, 4 hours (tested)
 - The Impact of Ventilation in Building Structures on Fire Development, April 2016, 4 hours (tested)
 - Fundamental of Interviewing, March 2016, 4 hours (tested)

- Critical Thinking Solves Cases, March 2016, 4 hours (tested)
- Physical Evidence & the Fire Scene, Feb. 2016, 4 hours (tested)
- Residential Electrical Systems, Feb. 2016, 4 hours (tested)
- Electrical Safety, Feb. 2016, 3 hours (tested)
- Insurance and the Fire Investigation, Feb. 2016, 4 hours (tested)
- Using Resources to Validate Your Hypothesis, Jan. 2016, 2 hours (tested)
- Basic Electricity, Jan. 2016, 4 hours (tested)
- Accreditation, Certification, and Certificates, Jan. 2016, 3 hours (tested)
- Documenting the Event, Jan. 2016, 4 hours (tested)
- Using Resources to Validate Your Hypothesis, Jan. 2016, 2 hours (tested)
- Vacant and Abandoned Buildings: Hazards and Solutions, Jan. 2016, 4 hours (tested)
- Introduction to Fire Dynamics and Modeling, Oct. 2015, 4 hours (tested)
- Explosion Dynamics, April 2013, 4 hours (tested)
- DNA Evidence, Feb. 2013, 3 hours (tested)
- Digital Photography and the Fire Investigator, Dec. 2012, 4 hours (tested)
- Potential Value of Electronic Evidence in Fire Investigations, March 2012, 4 hours (tested)
- Arc Mapping Basics, Feb. 2012, 4 hours (tested)
- Wildland Fire Investigations, Feb. 2012, 5 hours (tested)
- Expert Witness Courtroom Testimony, IAAI, Texas Chapter, May 2018, 40 hours (tested)
- Electrical Aspects of Fire Investigation, San Diego Fire Department/IAAI, September 2017, 24 hours (tested)
- Asbestos Awareness Training, Occupational Safety & Health Administration (OSHA.gov), May 2017, 4 hours (tested)
- California Conference of Arson Investigators/San Diego Fire Department Seminar (Vehicle Fire Investigations), May 2016, 4 hours (tested)
- Unified Investigations & Sciences (UIS) New Employee Course (Insurance, Evidence Collection & Submission Procedures w/ Practical, Evidence Photography, Daubert Challenges, Report Writing), May 2016, 24 hours (tested)
- Asbestos Awareness Training, OSHA.gov, Feb. 2016, 4 hours (tested)
- National Association of Fire Investigators (NAFI/IAFI) – Spoliation, Dec. 2015, Spoliation, 2 hours (tested)
- United States Army
 - Weapons Intelligence Course – Vehicle Borne Improvised Explosive Devices (VBIED) & Post-Blast Investigations, Sept. 2015, 8 hours (tested)
 - Bioterrorism Preparedness, March 2015, 4 hours (tested)
 - Hazardous Materials/Explosives Recognition, Handling, and Transportation, July 2014, 8 hours (tested)
 - Suicide Bombers, April 2014, 4 hours (tested)
 - Introduction to Improvised Explosive Devices, Feb. 2014, 40 hours (tested)
- Western Forensic Law Enforcement Training Center (WFLETC), CBRNE for First Responders/Investigators, April 2013, 40 hours (tested)
- Sanfran-Morpho, Inc., What Makes an Expert Witness, April 2013, 2 Hours

- International Association of Arson Investigators (IAAI) - Virginia Chapter, Digital Photography and Crime Scene Documentation, March 2012, 4 hours (tested)
- Central Virginia Fire Marshals' Association (CVFMA)
 - Legal Updates and Fire Investigations, September 2010, 3 hours
 - Incident Response to Terrorist Bombings, July 2010, 4 hours



Rimkus Consulting Group, Inc.
5707 South Laburnum Avenue
Richmond, VA 23231
757-229-2226 Telephone
(888) 286-9943 Facsimile

January 26, 2016

Re: RCG File No: 47602503
USPS LLV No: 1263018
Exam Location: 8409 Lee Highway in Merrifield, Virginia
Subject: Preliminary Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 1263018, which reportedly occurred at 6524 Columbia Pike in Falls Church, Virginia on November 22, 2015. In the course of the work, we examined and documented the fire-damaged vehicle and interviewed the carrier/operator on November 25, 2015.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 8409 Lee Highway in Merrifield, Virginia. The work to complete this assignment was performed by Fire Consultant William R. Clark, IAAI-CFI. This report and file are being reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach, as recommended in the current edition of National Fire Protection Association's NFPA-921, "Guide for Fire and Explosion Investigations".

Conclusions

1. The area of fire origin was determined to be within the engine compartment of the involved LLV.
2. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the fire damage in the area of origin and the lack of conclusive physical evidence.
3. The cause of the fire is undetermined.

Inspection:

The fenders, hood and front section of the operator's area had been destroyed by the fire. The cargo area only sustained minor heat and smoke damage.

Interior Inspection:

The interior examination of the vehicle revealed that the dashboard had been destroyed. The fire had communicated from the engine compartment to this area.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the compartment. Examination of the oil dipstick showed that the oil level was within normal operating levels. The transmission fluid level was at the add mark (1/3). The battery located on the right side of the engine compartment had been exposed to heat, but was found intact. The battery cables did not display any noticable adverse electrical activity. The rubber section of fuel line, on the left side of the engine, had been consumed by the fire. The metal fuel line and filter located on the undercarriage of the vehicle were found intact. The LLV had a Davco fuel filter system.

During the examination, it was discovered that the positive battery cable belonging to the starter, and the conductor which supplies electrical power to the solenoid on the starter, were in contact with each other. The solenoid wire had been routed around the positive contact on the starter. This constant contact and vibration of the vehicle can cause the conductors to chafe, see photographs 5 and 6.

Undercarriage Inspection:

Examination of the undercarriage revealed soot and oxidation caused by the fire in the engine compartment. There was transmission fluid discovered on the oil pan. The rubber seal located between the dip stick and the transmission possibly failed due to flame impingement. The involved LLV had a GM frame.

Fuse Panel Inspection:

The fuse panel could not be examined due to the severity of the damage.

Area of Fire Origin:

The area of origin was determined to be within the engine compartment of the LLV.

Potential Contributing Factors:

Photographs provided by USPS staff clearly shows the engine compartment smoking and the engine compartment fully involved.

Due to the severe fire damage to the engine compartment, multiple potential ignition scenarios could not be conclusively eliminated.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interview:

The driver was interview on November 25, 2015 by telephone. He stated that he had been driving the vehicle up a hill, the vehicle started losing power, and the speedometer went to zero. The engine was also making a grinding sound. Once at the top of the hill, he parked the vehicle and called his supervisor to report the problem. While on the phone he observed the vehicle smoking and then fire coming from underneath the engine compartment.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William R. Clark

William R. Clark, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Manager

Attachments: Photographs, CVs

January 26, 2016
RCG File No. 47602503

Photograph 1

Exterior view of the left side of the vehicle.



Photograph 2

Exterior view of the right side of the vehicle.

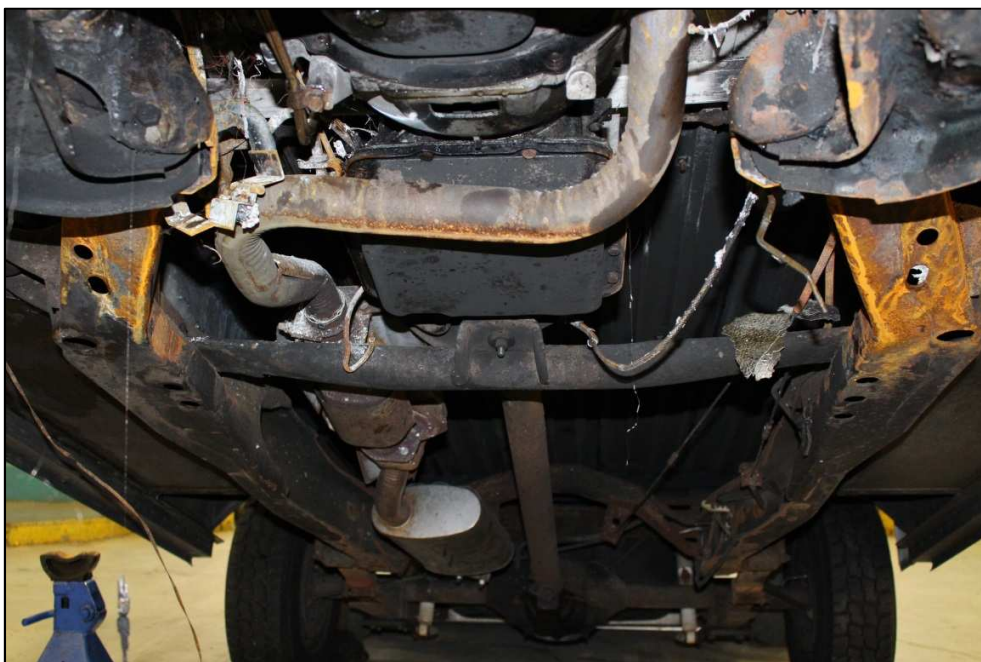


January 26, 2016
RCG File No. 47602503

Photograph 3
View of the engine compartment.



Photograph 4
View of the undercarriage.



January 26, 2016
RCG File No. 47602503

Photograph 5

Positive battery cable to the starter and the solenoid conductor in contact with each other



Photograph 6

Close-up view of the contact made between the cable and conductor.



January 26, 2016
RCG File No. 47602503

CVs



**William “Bill” Clark, IAAI-CFI, CFEI, CVFI
Fire Consultant**

Mr. Clark is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (VACFI) with the Virginia Department of Fire Programs. Mr. Clark is a Registered Private Investigator with the Virginia Department of Criminal Justice Services.

Mr. Clark has conducted over 900 fire/explosions investigations as a law enforcement officer and private fire investigator. These fire/explosion investigations have involved commercial & residential structures, as well as heavy equipment and vehicles. Mr. Clark has extensive experience investigating fires involving injury and death. Mr. Clark has also conducted investigations involving hazardous materials. Mr. Clark has instructed firefighters, police, and military in fire investigation procedures, death investigations, evidence collection, homemade explosives, and post blast investigations, weapons of mass destruction & clandestine lab recognition and safety.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Tidewater Community College, Virginia Beach, VA
Associates in Fire Science, 12 Credit Hours

Virginia Department of Fire Programs
Firefighter 1, 2, & 3, 1987

Virginia Department of Criminal Justice Academy, Petersburg, VA
Police Academy, 1989

National Fire Academy, Emmetsburg, MD
Fire/Arson Investigation Course, 1996

Virginia Department of Forensic Sciences, Lynchburg, VA
Death Investigation, 2000

Greater Cincinnati Regional Arson and Fire Investigation Association
Fire Investigation, 2003

North Carolina/South Carolina International Association of Arson Investigators Fire Investigation Seminar, 2015

Virginia State Police, Richmond, VA
Vehicle Theft Investigation, 2003

Virginia Chapter of the International Association of Arson Investigators
Electrical Fire Investigation, 2000
Fire Investigation, 2001
Small Appliance Fire Investigation 2001
Fire Investigation, 2003
Fatal Fire Investigation, 2004
Fire Investigation, 2008
Meeting the 1033/921 Challenge, 2013

William “Bill” Clark, IAAI-CFI, CFEI, CVFI

Bureau of Alcohol, Tobacco, Firearms, & Explosives, Richmond, VA
Post Blast Investigation, 2004

Virginia Department of Fire Programs, Norfolk, VA
Environmental Crimes Investigations, 2005
Arson Scene Evidence Processing, 2009

Central Shenandoah Criminal Justice Training Academy, Weyers Cave, VA
Crime Scene Investigations Course, 2005

Central Virginia Criminal Justice Academy, Lynchburg, VA
Reid Interviewing Techniques, 2006
Reid Interview Advanced Techniques, 2007

Public Agency Training Council
Vehicle Fire Investigation Course, 2006
Arson Evidence Collection Course, 2007
Arson for Profit Course, 2009

Federal Emergency Management Agency, Anniston, AL
Hazardous Materials Technician, 2008

Zero Point, Virginia Beach, VA
Advanced Homemade Explosives, 2012

Safety Unlimited
HAZWOPER Training & Certification, 2014

Member of: National Association of Fire Investigators
 International Association of Bomb Technicians & Investigators
 International Association of Arson Investigators
 Virginia Chapter – International Association of Arson Investigators

EMPLOYMENT HISTORY

2014 to Present	Rimkus Consulting Group, Inc.
2006 to 2014	Fire Technology Consultants, LLC (Part Time)
2009 to 2012	Joint Improvised Explosive Device Defeat Organization (MPRI Contractor)
2004 to 2009	Albemarle County Fire Marshal's Office
2003	Donan Engineering Company
2001 to 2006	Danielson Investigative Services (Part Time)
2001 to 2006	Fire Analysis Consulting Group (Part Time)
1998 to 2003	Amherst County Sheriff's Office
1989 to 1998	City of Franklin Police Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
8880 Rio San Diego Drive, Suite 800
San Diego, California 92108
(619) 822-1272 Telephone
(714) 954-1952 Facsimile

June 19, 2018

Re: RCG File No: 76500197
LLV Number: 1263299
VMF Location: 11251 Rancho Carmel Drive San Diego, California
Subject: Preliminary/Final Report

Dear

On May 10, 2018, a fire involving USPS LLV 1263299 reportedly occurred during the delivery route at the address of 1613 Lake Drive in Encinitas, California. The vehicle was manufactured by Grumman in 1991, model LLV-91 RH.

Rimkus Consulting Group, Inc. was retained to examine LLV 1263299, VIN 1GBCS10AXN2901365 at the VMF located at 11251 Rancho Carmel Drive in San Diego, California. In the course of our work, we inspected and photographed the LLV and reviewed the vehicle repair and maintenance orders on May 21, 2018. The vehicle examination was conducted by Fire Consultant Gerard Kenny, IAAI-CFI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The vehicle sustained moderate to severe fire damage to the engine and driver's compartment from the fire originating within the engine compartment.
2. The area of origin was determined to have been on the mail side of the engine compartment, adjacent to the 2.5 liter, L-4 engine and above the exhaust

manifold in the area where the braided flexible hoses attached to the fuel supply line.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of an unspecified failure of the fuel line, causing atomized fuel to contact the exhaust manifold directly below the connection point of the fuel line. The atomized fuel ignited on the hot surface and spread to adjacent combustible materials.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. Severe fire damage was observed to the engine compartment of the vehicle. The doors to the passenger compartment had fire and smoke damage which was caused by the fire which originated in the engine compartment. The front of the vehicle had sustained severe fire damage. The majority of the cover for the engine compartment had been consumed by the fire. The bulkhead between the engine compartment and the mail compartment was observed with severe mass loss. The front grill and lights of the LLV were observed to be intact with no fire damage.

Minor heat damage was observed to the cargo area. The aluminum roof of the vehicle that covered the operator's compartment had melted as a result of the fire. The front fenders were observed with severe fire damage. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The mail side front tire was fire damaged causing it to expel all of its air. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

During the examination of the interior, we observed severe fire damage to the interior operator cab compartment, and minor damage to the rear cargo compartment. Fire patterns indicated the fire entered the cargo compartment through the center opening from the operator's compartment. Moderate fire damage was observed along the ceiling and upper side walls of the cargo space.

Observations of the fire patterns inside the cargo area confirmed that the rear cargo door had been in the closed position at the time of the fire. Some burned remnants of mail were observed still inside the cargo area.

An analysis of the fire patterns on the interior of the vehicle indicated that the fire extended into this area from the engine compartment through manufactured openings in the fire wall. There was no physical evidence observed that would have indicated that the fire originated in the interior of the vehicle.

Engine Compartment Inspection:

Severe fire damage was observed throughout the engine compartment. The vehicle was equipped with a GM 2.5L, four-cylinder gasoline engine. The majority of the combustible material (hoses, belts, electrical wiring insulation) had been consumed in the fire. The oil dipstick was still present, and when examined it showed that the oil level was within normal limits. Examination of the remaining electrical wiring revealed severe fire damage to the wiring. No indications of adverse electrical activity were observed on the wiring. The battery cables were also severely fire damaged.

The most severe fire damage had occurred on the mail side of the engine block towards the bulkhead. Observations of the fire patterns in this area indicated that this was the area of fire origin. An approximate 6 inch gap was observed between the fuel lines where a braided, flexible hose had been connected to the metal fuel line using compression fittings as the fuel line connector. Severe fire damage was observed in this area, including the exhaust pipe below the braided flexible fuel line connection. Fire patterns indicated the fire traveled from this position towards the bulkhead where they extended into the mail side of the operator's compartment.

Undercarriage Inspection:

Examination of the undercarriage revealed severe fire damage in the area of the engine compartment. No fire damage was observed to the rear areas of the undercarriage. The exhaust system was intact and the transmission did not reveal any leaks or failures. The LLV was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel positioned behind the instrument panel in the dashboard sustained severe fire damage. However, no evidence of adverse electrical activity was noted. The

respective wiring harness associated with the fuse panel was inspected and did not reveal any unexpected damages from a fire with this intensity.

Area of Fire Origin:

It is our opinion, based on observations of the fire patterns within the vehicle and after a systematic evaluation of the remaining physical evidence, that this fire originated within the engine compartment on the mail side of the engine where the fuel lines were located. The fuel lines had been consumed by the fire. This fire was caused by leaking fuel igniting when the operator attempted to restart the vehicle.

Potential Contributing Factors:

A review of the USPS service records indicated that on December 5, 2017 during Preventive Maintenance, an entry shows a "44-LLV KIT, FUEL LINE FRONT – REPLACE". It is possible that the fuel line connector vibrated loose after five months of use and contributed to the cause of this fire incident.

After completing the inspection at the VMF, we went to the scene of the fire in Encinitas. We discovered a small burned section of fuel line on the side of the road and a stain in the blacktop where the vehicle had burned.

Evidence Collected:

There was no physical evidence collected at the time of the LLV examination.

Interviews:

The carrier was on thirty days of leave after the incident. We received the following information from the maintenance supervisor;

"When mail carrier attempted to restart the vehicle, he noticed smoke coming in from under the steering wheel in the area under the hand brake. The mail carrier called the office to let us know that his vehicle would not start and there was smoke. Supervisor advised the carrier to take a 10 minute break while waiting for him to find a replacement vehicle. While he was waiting outside of the vehicle, a couple of minutes later he noticed pieces dropping from the engine compartment onto the ground that were on fire. Seconds later the vehicle engine compartment was on fire".

Service Records:

A review of the provided service records for the involved LLV was conducted. According to the maintenance records, major work had been carried out to the vehicle during its last Preventive Maintenance on December 5, 2017.

The fuel pump and battery were replaced on May 2, 2018 which was eight days prior to the fire incident.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gerard A. Kenny

Gerard A. Kenny, IAAI-CFI, NAFI-CFEI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

June 19, 2018
RCG File No. 76500197

Photograph 1
Front view of LLV 1263299.



Photograph 2
Driver's side view.



June 19, 2018
RCG File No. 76500197

Photograph 3

Mail side with flat front tire (red arrow).



Photograph 4

Area of fire origin in red circle.



June 19, 2018
RCG File No. 76500197

Photograph 5

Six inch gap in fuel lines where flexible fuel hoses were missing.



Photograph 6

Fire scene on Lake Drive, Encinitas.



June 19, 2018
RCG File No. 76500197

Photograph 7

Burned fuel line from fire scene on Lake Drive, Encinitas.



June 19, 2018
RCG File No. 76500197

CVs



GERARD A. KENNY, IAAI-CFI, NAFI-CFEI FIRE CONSULTANT

Mr. Kenny is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and Certified Fire and Explosion Investigator (NAFI-CFEI) with the National Association of Fire Investigators.

He received a National Certificate in Industrial Engineering from Regional Technical College in Galway, Ireland. Mr. Kenny has personally worked over 1,300 fire and explosion investigations. Mr. Kenny has acted as an expert witness and is licensed as a Private Investigator in CA, OR and WA. His forensic experience includes investigations of fire and explosion incidents in industrial, commercial, residential structures, vehicle, boats/vessels, and marinas. His areas of expertise include fire scene analysis, evidence, data collection, monitoring of destructive and non-destructive testing, investigative interviews, scene photography, and ICC and NFPA fire code compliance.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

International Association of Arson Investigators (IAAI)- Certified Fire Investigator
Certified Fire and Explosion Investigator (CFEI) - National Association of Fire Investigators
Special Commission Fire/Arson Investigator King County Sheriff's Office, Seattle, Washington
Basic Law Enforcement Academy at Washington State Criminal Justice Training Center
Illinois State Fire Marshal Fire/Arson Investigator Certification.
Emergency Medical Technician-Basic Certification, Chicago, Illinois
Firefighter II Certification, Chicago Fire Academy, Chicago, Illinois
Regional Technical College National Certificate in Industrial Engineering, Galway, Ireland

EMPLOYMENT HISTORY

2017 – Present	Rimkus Consulting Group
2015 – 2017	Envista Forensic Consulting Services
2007 – 2015	King County Sheriff's Office, Seattle, WA
2004 – 2007	Rayburn Fire Scene Investigations
1996 – 2007	Chicago Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
6990 Columbia Gateway Drive, Suite 110
Columbia, MD 21046
(877) 872-2999 Telephone
(410) 872-9111 Facsimile

July 8, 2016

Re: RCG File No: 47508204
LLV Number: 1263301
VMF Location: 6A Waelchli Avenue in Halethorpe, Maryland
Subject: Final Report

Rimkus Consulting Group, Inc. was requested to examine the vehicle fire loss involving USPS LLV 1263301, VIN 1GBCS10A4N2901359 that reportedly occurred after the vehicle stopped operating at 701 Hammonds Lane in Pumphrey, Maryland. In the course of our work, we examined and documented the fire-damaged vehicle on April 29, 2016, and interviewed the carrier/operator on April 26, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 6A Waelchli Avenue in Halethorpe, Maryland. The work to complete this assignment was performed by Fire Consultant Charles W. Feeley, IAAI-CFI. This report and case was reviewed by Mr. Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The involved LLV sustained severe fire and smoke damage.
2. The area of fire origin was determined to be within the engine compartment.
3. The specific area of fire origin was determined to be at and around the positive electrical cable between the battery and the starter.

4. The specific ignition sequence and cause of the fire was determined to be the direct result of the unsecured main battery cable to the starter being chafed against the steering linkage causing an adverse electrical event which ignited available combustible material in the area of fire origin.

Observations

Exterior Inspection:

The front of the vehicle sustained fire and heat damage to the A and B posts, hood, windshield and roof. The left side sustained fire and heat damage from the front fender to the top of the door panel. The side panel of the cargo area sustained heat and smoke damage along the top edge and at the rear vent. The rear sustained fire and heat damage to the upper portion of the overhead door. The right side sustained fire and heat damage from the front fender to the driver's door. The side panel at the cargo area sustained fire and heat damage at the leading edge at the driver's door. The rear tires were undamaged by the fire. The left front tire sustained heat damage to the top surface. The right tire sustained fire and heat damage to the top surface.

Interior Inspection:

The passenger compartment sustained fire and heat damage throughout. The combustible materials of the seat had been consumed. The dashboard had been consumed by the fire. The insulation of the electrical wiring harness in the dashboard had been consumed. The Engine Control Module positioned within the center of the dashboard sustained fire and heat damage to the front and top surfaces. The rear cargo area sustained fire and heat damage throughout. The damage was most severe at the front bulkhead and roof. The contents of the cargo area had been removed prior to the inspection.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the engine compartment. The engine compartment sustained fire, heat and smoke damage throughout. The damage was most severe on the left driver side of the engine compartment. The fuse block located in the engine compartment was too severely damaged to evaluate. The brake booster sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been consumed. The fixed fuel lines were intact and attached to the fuel rail on the right side of the engine. The flexible fuel lines positioned on the left side of the engine had been consumed. The aluminum dome covers had sustained fire and heat damage. The damage increased on the left, driver side of the engine. The electrical wiring harness in the right rear of the engine compartment

contained insulation on the conductors. The insulation of the conductors in the wiring harness on the left side of the engine compartment had been consumed. The upper radiator hose on the right side of the engine compartment sustained the most severe damage on the top. The lower radiator hose positioned on the left side of the radiator sustained fire damage on the top. The rear surface of the power steering pump sustained fire damage. The battery was inspected and had sustained fire damage to the top and side nearest to the engine. The negative battery terminal had become detached. The positive terminal was intact and the conductors to the alternator and starter were attached. The loom and the insulation had been consumed from the cables. The alternator sustained heat damage, but the electrical connections were secure. The starter sustained heat damaged, but the electrical connections were secure. The main cable to the starter had been severed approximately four inches from the terminal and displayed beading on the ends of the strands. The detached portion of the conductor to the starter displayed loss of mass and beading. The lower portion of the conductor had been fused to the steering linkage above the starter. The loom which previously held the conductor in place at the right side of the engine block was not connected and was hanging loose on the conductors.

Undercarriage Inspection:

Examination of the undercarriage revealed no evidence of soot, smoke, heat or fire damage. The involved LLV was mounted on a GM frame. The fuel lines were positioned above the open frame to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. They were routed under the rear of the engine to the right side of the engine. The transmission was undamaged by the fire. The breather tube on top of the transmission was undamaged.

Fuse Panel Inspection:

The fuse panel could not be inspected due to severe fire damage.

Area of Fire Origin:

The area of fire origin was determined to be on the right, driver's side of the engine compartment. The point of origin was determined to be at the contact point between the main battery conductor to the starter and the steering linkage.

Contributing Factors:

Failure to re-secure the main battery cable to the right side of the engine after replacing the alternator, allowing the cable to chafe on the steering linkage, could have contributed to the fire.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interview:

The carrier/operator was interviewed by telephone on April 29, 2016 and provided the following information:

- He started work at approximately 9:30 a.m. on the day of the fire.
- The fire occurred at approximately 3:00 p.m.
- He drove the vehicle all day with no problems.
- The vehicle “conked” out while at his next to last stop.
- He was able to restart the vehicle and proceed to his last stop.
- The vehicle stopped running again.
- He attempted to restart the vehicle with no success.
- When he turned the key it was completely dead.
- He did not hear the starter cranking.
- After sitting for two or three minutes, he began to see smoke coming through the dashboard.
- He was unable to open the hood due to mechanical problems.
- He saw fire approximately five minutes later.
- He saw flames on the driver side as he was exiting the vehicle.
- He has constant problems with the vehicle including not starting and running rough.
- The alternator was replaced last year.

Service Records:

A review of the service records indicated that the alternator had been replaced and the main positive battery connecting cable had not been re-secured which caused it to rub and chafe on the steering linkage. No other service work was observed that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles W. Feeley

Charles W. Feeley, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

Photograph 1

A view of the right side of the engine compartment.



Photograph 2

A view of the battery and conductor to starter.



Photograph 3

The loom which previously held the conductor.



Photograph 4

A view of the conductor from the battery to the starter.



July 8, 2016
RCG File No. 47508204

Photograph 5

A view of the conductor fused to the steering linkage.



July 8, 2016
RCG File No. 47508204

CVs



**CHARLES FEELEY, I.A.A.I., C.F.E.I., C.F.I., P. I.
FIRE CONSULTANT**

Mr. Feeley had been employed by the Baltimore City Fire Department for 35 years. In this capacity he had been involved in many different emergency positions including Fire Fighter, Lieutenant, Captain, Chief Safety Officer, Battalion Commander and Division Chief.

Mr. Feeley has completed numerous educational seminars and continuing educational courses.

Mr. Feeley investigated over 550 fires in four years as an investigator and in excess of 5,000 fires as an incident commander at fire scenes. He has given expert testimony in civil and criminal court cases. He supervised the Office of the Fire Marshal in Baltimore City. He also supervised special projects such as the Arson Task Force, juvenile fire setters program, an educational intervention program and public education programs.

At Rimkus Consulting Group, Mr. Feeley has conducted over 500 fire origin and cause determinations that include, but are not limited to, assignments involving residential, commercial, industrial, passenger and commercial vehicles, marine, farm implement/equipment, appliance and electrical equipment related fires.

Mr. Feeley has been recognized for his achievements by being the recipient of awards that include Distinguished Unit Citation, Meritorious Conduct Award, Exemplary Performance, and Distinguished Service Award.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

National Fire Academy
National Nuclear Security Administration
United States Department of Justice, New Mexico Tech.
Department of Homeland Security
National Association of Fire Arson Investigators
United States Department of Justice, Anniston AL.
National Association of Fire Investigators.
Certified Fire and Explosion Investigator, N.A.F.I Certification
Certified Fire Investigator, International Association of Arson Investigators
Licensed as a Private Investigator in the State of Delaware

EMPLOYMENT HISTORY

2006 – Present	Rimkus Consulting Group, Inc.
1970 – 2006	Baltimore City Fire Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus New York, PLLC
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, NJ 07631
(201) 368-8551 Telephone
(201) 368-8557 Facsimile
Certificate of Authorization No. 0010333

August 23, 2016

Re: RCG File No: 47400059
LLV Number: 1263475
VMF Location: 1335 Jefferson Road in Rochester, New York
Subject: Preliminary Report

Rimkus New York, PLLC was retained to examine LLV 1263475, VIN 1GBCS10AXN2901513 that was involved in a fire event. The vehicle was examined at the USPS Rochester Vehicle Maintenance Facility located at 1335 Jefferson Road in Rochester, New York. The fire incident reportedly occurred on Jackson Hollow Road in Newfield, New York on July 28, 2016.

In the course of our work, we examined and documented the fire damaged vehicle on August 5, 2016, and interviewed carrier/driver. Our work to complete this assignment was performed by Fire Consultant Harold W Henrich, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a counterclockwise direction. For the purpose of this report, the right side of the vehicle

refers to the driver's side and the left side refers to the mail side. Severe fire/thermal damage was noted to the entire front end of the LLV. All of the front-end body parts along with the cab, roof, and windshield structural supports were consumed by the fire event. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, the two rear tires of the LLV were found to be of the same make, size, and manufacturer. The two front tires were consumed during the fire event. There was no evidence to indicate that the brakes, wheel assembly or axles had failed. The fuel cap was in place and secured.

Interior Inspection:

Severe fire/thermal damage was observed to the interior cab area. The dashboard and driver side seat upholstery were consumed during the fire event. Part of the wall separating the cab and box area was consumed during the fire event along with a small section of the mail table on the passenger side. Interior of the box compartment sustained moderate fire and smoke damage.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine. The LLV was equipped with a GM fuel filter system and an aftermarket fuel filter located on the passenger side of the engine. The fuel system was examined and all metal fuel lines were observed to be intact. All rubber fuel lines located in the engine compartment were consumed by the fire event. The majority of the battery was consumed during the fire event; a small piece of battery cell was located in the fire debris. The positive power cables along with the battery grounding cable were located and showed thermal damage, both battery connectors were intact. The engine oil and transmission fluid were examined and observed to be within their normal operating ranges. Severe fire damage was observed throughout the engine compartment with several components being consumed during the fire event. Severe thermal damage was observed to the front portion of the throttle body assembly located on the driver's side. The throttle body assembly was positioned towards the rear of the alternator. Both battery cables were routed through a mounting bracket that attached to the throttle body assembly.

Undercarriage Inspection:

The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the engine/transmission showed signs of leaking fluids from both the pans. The front portion of the undercharge sustained moderate thermal damage from the fire event. Severe fire/thermal damage noted to the wheel assembly on the driver side with lost tension on the drivers driver side coil spring.

Fuse Panel Inspection:

The fuse panel was consumed during the fire event; no identifiable parts of the fuse panel could be located within the fire debris. The interior cab wiring harness was located in the fire debris and sustained severe fire/thermal damage along with the control module.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated at or behind the alternator. In this area was the alternator, coil pack, and the positive power battery cable along with the grounding battery cable. The alternator was replaced on February 22, 2016.

Potential Contributing Factors:

An adverse electrical activity event or associated thermal event with the alternator, positive/negative battery cables in the area of origin could not be eliminated. The involved components were collected and sent to Jack Kennedy in the Charlotte, North Carolina office for analysis.

Evidence Collected:

Exhibit A: Alternator

Exhibit B: Coil Pack

Exhibit C: Interior and engine compartment wiring harness

Exhibit D: Positive and negative battery cables

Evidence will be examined prior to the issuing of the final report.

Interview:

On August 8, 2016, a phone interview was conducted with carrier/driver of LLV 1263475 at the time of the fire. He reported the following information:

- He has been assigned to this LLV for a couple of years. He did not know the exact time period.
- Over the past 6 months, the only issue he has had with this LLV was the transmission fluid seemed to be "over full" at times.

- He stated on the day of the fire he had no issues with the LLV and it started good with no hesitation.
- He stated he had no prior issues with the windshield leaking or flashers.
- He stated the events leading up to the fire were as follows: he was driving between boxes when he looked in the driver side mirror and saw smoke coming “down low” underneath the vehicle. He stated no lights came on in the dashboard and the gauges were all showing normal. He did not lose any power to the LLV. He stated he immediately pulled over, called 911, and got all the mail out of the LLV along with some of his personal belongings. At this time, he observed smoke and flames coming from the hood area closest to the driver side windshield, he also heard a bubbling noise. He stated he called 911 again to advise the situation along with his supervisor.
- He stated he was not injured as a result of the fire.

This preliminary report contains a summary of our findings and does not include a full description of the investigative tasks and methodology we took to reach our conclusions. If a full final report of findings is needed, one will be completed at the request of USPS.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NEW YORK, PLLC

Harold W. Henrich

Harold W. Henrich, IAAI-CFI

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI

Attachments: Photographs, CVs

August 23, 2016
RCG File No. 47400059

Photograph 1
Front view.



Photograph 2
Driver side.



August 23, 2016
RCG File No. 47400059

Photograph 3
Rear.



Photograph 4
Passenger side.



August 23, 2016
RCG File No. 47400059

Photograph 5
Engine compartment.

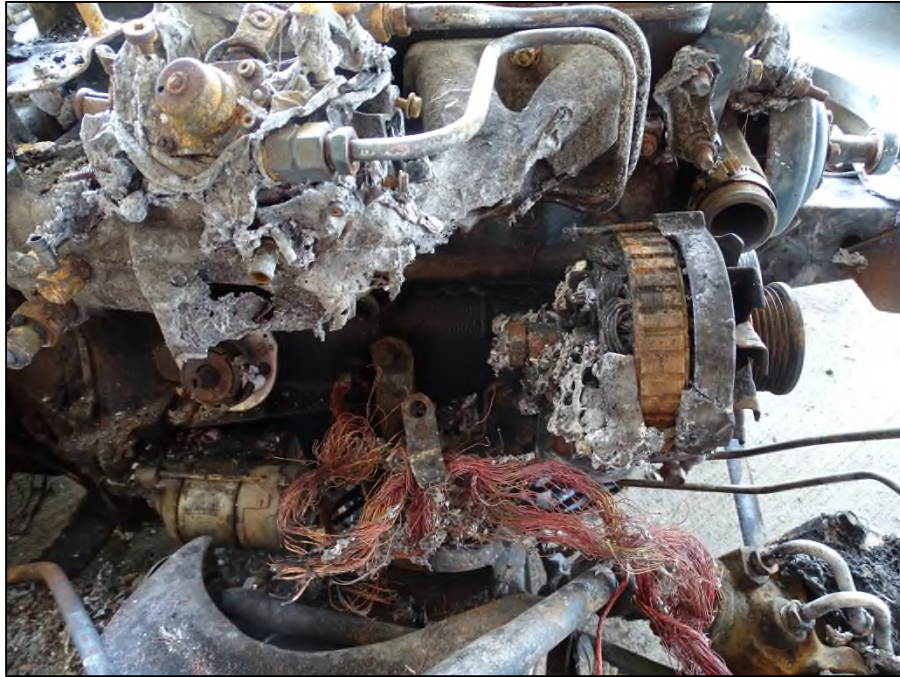


Photograph 6
Thermal damage to front part of throttle body.

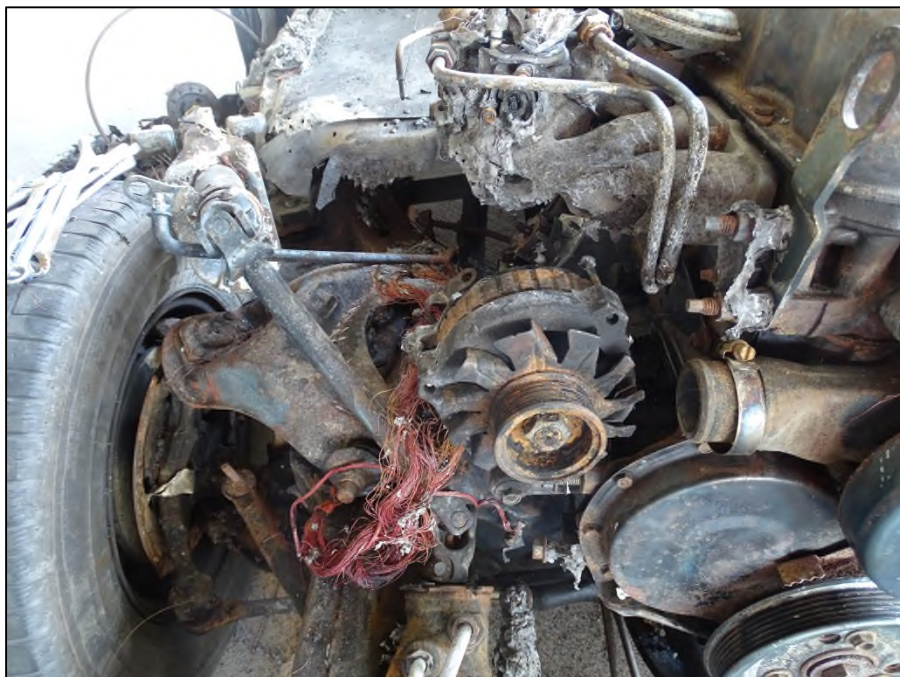


August 23, 2016
RCG File No. 47400059

Photograph 7
Area of origin.



Photograph 8
Front view of alternator, throttle body damage.



Photograph 9

Area where battery cables where mounted on throttle body.



Photograph 10

Exhibit A, B & D.



August 23, 2016
RCG File No. 47400059

CVs



HAROLD W. HENRICH, IAAI-CFI, CFEI, CVFI FIRE CONSULTANT

Mr. Henrich is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and a Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators and a Certified Fire Investigator (NC-CFI) with the North Carolina Fire Rescue Commission. He has been active in the fire service for 30 years holding the positions of Firefighter, Captain, Fire Chief and Fire Marshal in both Career and Volunteer Departments.

Mr. Henrich areas of expertise is specializing in origin and cause fire investigations in both the public and private sectors involving over 500 fire causation on commercial, residential structures, vehicles and heavy construction equipment. He has completed and maintains state, national and international certifications as a Fire Investigator, Fire Instructor, Fire Inspector, Fire Officer, Fire & Life Safety Educator, Hazardous Materials, Firefighter, and completed numerous educational seminars and continuing education courses in the field of fire investigation.

Mr. Henrich while serving in the capacity of a Fire Instructor has coordinated and instructed continuing education courses within the Fire Service field and basic Fire Investigation classes.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Candidate, Columbia Southern University, Orange Beach, AL, B.S Fire Administration / Fire Investigation

International Association of Arson Investigators

Certified Fire Investigator, 2014

Expert Witness Court Room Testimony, 2014

National Association of Fire Investigators

Certified Fire and Explosion Investigator (CFEI), 2010

Certified Vehicle Fire Investigator, (CVFI), 2010

National Board on Fire Service Professional Qualification

Fire Investigator, NFPA 1033-2014, 2014

North Carolina Fire and Rescue Commission

Certified Fire Investigator, 2005

Fire Inspector Level III, 2012

Fire Life Safety Educator III, 2009

Fire Instructor II, 2001

Fire Officer II, 2005

Firefighter II, 1994

Hazardous Materials Level I, 2000

Hazardous Materials, Personal Protective Equipment, 2011

Hazardous Materials, Technical Decontamination, 2011

Hazardous Materials, Air Monitoring & Sampling, 2012



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
14635 West 95th Street
Lenexa, KS 66219
(800) 618-2210 Telephone
(877) 228-2223 Facsimile

January 10, 2017

Re: RCG File No:

22600994
LLV Number: 1264077
VMF Location: 3131 Wyandotte in Kansas City, Missouri
Subject: Preliminary/Final Report

Dear,

On November 6, 2016, a fire involving LLV 1264077 occurred. At the time of the fire, the vehicle was traveling west bound on Missouri interstate 44, near Mount Vernon, Missouri. On November 10, 2016 Rimkus Consulting Group, Inc. was retained to examine LLV 1264077. Our inspection of the vehicle occurred on November 16, 2016 at the USPS vehicle maintenance facility located at 3131 Wyandotte in Kansas City, Missouri. This report and case was reviewed by, Jack R. Kennedy III, IAAI-CFI, Technical Fire Manager.

In the course of our work, we completed an onsite inspection of the vehicle, including photographing the vehicle, collecting evidence, and interviewing the driver of the vehicle on November 16, 2016.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area or origin within the engine compartment was determined to be in the area of the fuel lines and the exhaust manifold.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rubber fuel lines in the area of origin which allowed atomized gasoline to be sprayed onto the hot surface of the operating exhaust system and ignite.

Observations

Exterior Inspection:

An exterior examination of the vehicle began at the front and continued in a clockwise direction. Exterior fire damage was extensive to the front portion of the vehicle. The most severe damage was visible within the engine compartment and decreased moving into the passenger compartment of the vehicle. Fire damage and mass loss of materials was observed to the hood, front quarter panels above both tires and the front portion of the vehicle body adjacent to and above the bulkhead. Visible fire patterns indicated the driver's door was open during the fire. The rear of the vehicle sustained heat and fire damage throughout the interior.

Interior Inspection:

Fire damage and mass loss was observed throughout the front of the vehicle, and most of the combustible materials had been consumed. Fire and heat patterns extended up and away from the front of the vehicle. Fire debris was systematically excavated within the passenger compartment and fire patterns were analyzed. The most profound area of damage was observed in the engine compartment and decreased moving from the front to the rear of the vehicle. The burned remains of the head lamp switch was identified and collected from the debris.

Engine Compartment Inspection:

Fire damage and mass loss throughout the engine compartment was severe and most of the combustible materials were consumed. The physical damage to the bulkhead was severe and most of the bulkhead had been melted or consumed during the fire. A visual and tactile inspection of the surviving electrical conductors was completed. No evidence of adverse electrical activity was observed along the large diameter battery cable or the smaller wiring harness. Fire damage and mass loss of materials was observed to the combustible sections of the fuel delivery system along the left side of the engine. Visual inspection of the left side of the engine was completed. We identified a bolt protruding from the bottom portion of the exhaust manifold where the manifold attached to the engine block. The bolt was protruding approximately 1/2" from the flange of the manifold.

Undercarriage Inspection:

The inspection of the vehicle undercarriage was completed using the lift arm of a tow truck available at the maintenance facility. The undercarriage of the vehicle sustained no fire damage related to the cause of the fire. The fire damage visible from the underside of the vehicle was caused by radiant heat from above. The most severe oxidation and heat damage was observed below the left side of the engine. In our opinion, the fire did not originate along the underside of the vehicle. The involved LLV was mounted on a GM frame. The LLV was equipped with a GM fuel filter system.

Fuse Panel Inspection:

The remains of the fuse panel were recovered from the debris below the dash panel, on the driver side of the vehicle. Fire damage and mass loss to the fuse panel was severe. No physical evidence of adverse electrical activity was observed on the remains of the fuse panel.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, the fire originated within the engine compartment of the vehicle. The specific area of origin within the engine compartment was not conclusively identified. However, the driver's observations indicated the fire may have originated along the left side of the engine.

Contributing Factors:

The fuel pump and fuel sending unit were replaced on the vehicle on or around July 13, 2016 (Work order # 17258941). The exhaust manifold was replaced on or around July 8, 2016 (Work order # 17036950). The fuel filter and fuel lines were routed in close proximity to the exhaust manifold. The loose bolt identified at the rear connection between the engine block and the exhaust manifold, may have exposed the fuel filter and/or fuel lines to combustion gases and extreme temperatures. This exposure may have contributed to the cause of the fire.

Evidence Collected:

The following items were collected as evidence:

- Exhibit A: Burned remains of the vehicle's main wiring harness
- Exhibit B: Copper conductors and artifacts collected from the floor below the right side of the vehicle
- Exhibit C: Burned remains of the fuse panel

- Exhibit D: Copper conductors and artifacts collected from the floor of the step inside the right door

The collected evidence will be stored at the Charlotte, NC secure evidence facility for 90 days for further examination if needed.

Interview:

On January 6, 2017, a telephone interview was completed with the driver of the vehicle. During the interview he provided the following information:

- The fire occurred on Sunday, November 6, 2016 in the afternoon. He had been delivering Amazon packages and was returning to Mount Vernon, Missouri from the area around Republic, Missouri.
- He was driving approximately 60 miles per hour, on Missouri Interstate 44, near Mount Vernon, when he observed smoke coming through the floor on the left side of the vehicle.
- He pulled to the shoulder of the interstate and stopped, at which time he observed flames coming through the floor on the left side.
- This was his first time to drive this vehicle and he did not encounter any problems with the vehicle prior to the fire.
- Reportedly, the fuel pump and a portion of the fuel delivery system had recently been replaced on this vehicle.

Service Records:

A review of the provided service records for the involved LLV was conducted. On August 11, 2016, repair work was reported on the LLV that involved the fuel pump sender and lock ring. There were no other listed repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Philip M. Noah

Philip M. Noah, IAAI-CF
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

January 10, 2017
RCG File No. 22600994

Photograph 1

View of the front of the vehicle.



Photograph 2

View from left rear corner of the vehicle.



Photograph 3

View of the left front portion of the undercarriage.



Photograph 4

View of the rear left side of the engine with the loose bolt in the exhaust manifold.



January 10, 2017
RCG File No. 22600994

CVs



Philip M Noah, IAAI-CFI Fire Consultant

Mr. Noah is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson investigators and a Certified Fire Investigator (CFI) in the State of Missouri. Mr. Noah is a licensed Private Investigator in the State of Arkansas; Mr. Noah is a licensed Private investigator and licensed Private Fire Investigator in the State of Missouri. Mr. Noah has over 27 years of experience in fire suppression operations, fire/explosion investigations, technical rescue, hazardous material incidents, fire code enforcement, and building construction plans review. He has lead or assisted in the origin and cause of more than 300 fire and explosion investigations. As a fire investigator he conducted origin and cause investigations on fatal structure fires, residential fires, commercial fires and vehicle fires.

Mr. Noah held the position of Fire Marshal with the Springfield Mo Fire Dept. from 2009 to 2015. As a Fire Marshal Mr. Noah served as a public safety bomb technician on the Springfield Mo. Bomb squad, and was a founding member of the Greene County, Missouri Arson task force, during this time he worked closely with the FBI and ATF. While in this position he also performed hundreds of building plans reviews looking for International Fire Code compliance. Mr. Noah has testified and been qualified as an expert in court proceedings pertaining to fire origin and causation.

Mr. Noah has instructed courses in fire scene evidence preservation, explosives awareness and fire investigation awareness for the insurance industry.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Missouri State University - General education and Chemistry
Drury University - Law Enforcement Academy
Certified Fire Investigator: IAAI (Tested)
Licensed Private Fire Investigator: State of Missouri
Licensed Private Investigator: State of Missouri
Certified Fire Investigator: State of Missouri (Tested)
Class "A" Peace officer license: State of Missouri (Tested)
Certified Firefighter 1&2: State of Missouri (Tested)
Certified Fire Officer 1&2: State of Missouri (Tested)
Certified Fire Inspector: State of Missouri (Tested)
Certified Fire Inspector 1&2: International Code Council (Tested)
Certified Bomb Technician: Federal Bureau of Investigation (Tested)
Certified Fire Service Instructor: State of Missouri (Tested)
Certified Major Crimes Investigator: Springfield Mo Police Department (Tested)
International Association of Arson Investigators, 2010- Present
Missouri Professional Fire and Fraud Investigators (past)
International Association of Fire Fighters (past)



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
2677 North Main Street., Suite 300
Santa Ana, CA 92705
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

February 16, 2016

Re: RCG File No: 71804436
LLV Number: 1264174
VMF Location: 11251 Rancho Carmel Drive in San Diego, California
Subject: Final Report

On December 4, 2015, a fire occurred involving USPS LLV 1264174. The loss location was reported as "Highway 8, Main Street exit" in El Cajon, California. LLV 1264174 was examined at the VMF located at 11251 Rancho Carmel Drive in San Diego, California on December 14, 2015.

Rimkus Consulting Group, Inc. was retained to examine LLV 1264174, VIN 1GBCS10A3N2902213, to determine the cause of the fire. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver and documented the vehicle with photographs. This report and case was reviewed for technical clarity by, Jack R. Kennedy III, IAAI-CFI, Technical Fire Manager.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the left side of the engine compartment, on and around the engine exhaust manifold and header.

3. A ragged hole in the engine crankcase was observed approximately four inches in diameter, located at the number two cylinder.
4. The specific ignition sequence and cause of the fire was the direct result of a major mechanical failure when a connecting rod pierced the left-side engine crankcase wall. This breach allowed partially atomized engine oil to flow out of the engine and onto the adjacent hot exhaust system components, which caused ignition of the engine oil.

Observations

Exterior Inspection:

The engine and driver compartment sustained severe fire damage. The structural area of the LLV surrounding the engine compartment had been consumed by fire on the left side. The right side grill and fender exterior remained intact. Fire effects destroyed the driver compartment by consuming all combustible contents, melting and warping metal and glass components. The cargo area sustained heat and fire damage at the adjoining driver compartment with fire effects and smoke damage diminishing to the rear. Other than heat effects to the front adjoining cargo compartment enclosure and cargo compartment roof, there was no exterior fire damage to the rear of the driver compartment.

The front grill, bumper, and fenders were severely fire damaged on the left side. The left side sustained melting of the entire aluminum right fender. Heat effects lessened to the right side, leaving grill and fender sections in place. All window glass had been broken and melted during the fire and was not in place. The operator door and rear door cylinder locks remained in place.

The left rear tire was intact and unburned. The right rear tire sustained surface charring of the entire circumference, indicating it had possibly rolled through flaming liquid. The right front tire was also surface scorched on one portion, indicating it was exposed to fire while the vehicle was stopped. The left front tire was destroyed by fire and the carcass was burned through. Damage to the left front tire was consistent with the severe damage/melting of the left front fender.

Interior Inspection:

The interior driver compartment was severely damaged by fire and all combustible components were consumed. Electrical conductors, wiring harness, and electrical components indicated exposure damage from fire entering via the engine compartment firewall/bulkhead. No physical evidence of adverse electrical activity was observed. Nearly all combustible wire insulation and related combustible components had been consumed by fire. Fire damage in the operator compartment was determined to be a

result of fire extension into this area through manufactured openings in the fire wall between this area and the engine compartment.

The cargo area interior remained intact, but sustained fire and heat damage to the roof, open rear cargo door, and at the front common area of the driver compartment. Flames and heat entered the doorway leaving distinct heat patterns at the doorway and wall. Damage diminished significantly to the rear where smoke damage primarily occurred.

Engine Compartment Inspection:

The engine compartment was severely damaged by fire and combustible contents were consumed or severely charred on the left side of the engine. Fire damage diminished slightly to the right side where some portions of plastic components remain unburned positioned near the right front grill/fender area.

Significant heat effects were noted to the left side of the engine compartment where the electrical wiring harness conductors were brittle and insulation had been consumed by fire. Heat and fire effects diminished slightly to the right side of the engine compartment where charred plastic insulation and components were more abundant.

The engine oil level was found to be empty. The transmission level was within normal operating range. The radiator and hoses sustained fire damage which allowed coolant to drain.

Examination of the left side of the engine compartment revealed a ragged hole in the engine crankcase, approximately four inches in diameter, located at the number two cylinder (For reference purposes the cylinders are numbered 1 to 4, with number one being at the front of the vehicle). When looking into the engine at the crankcase breach, mechanical damage to the crankshaft was observed. This hole was directly below the engine exhaust manifold and in front of the exhaust header pipe.

Further examination produced an engine piston fragment and mangled connecting rod. These observations indicated a catastrophic mechanical engine failure had occurred, allowing engine oil to be ejected onto the adjacent engine exhaust components.

Undercarriage Inspection:

There was no indication of impact damage to the frame or undercarriage components.

The undercarriage sustained no fire damage below the cargo compartment, however heavy soot appeared on undercarriage components in this area. The fuel tank was intact and unburned. The gas cap and filler tube were also intact. Fuel lines were intact at the tank and where traversing forward in the frame. The undercarriage sustained fire effects under the driver compartment and increased in severity forward toward the

engine compartment. The transmission case was intact. The engine oil pan was pierced from an internal impact, leaving a ragged oblong hole approximately ½ inch by ¾ inch. The LLV was mounted on a GM frame. The LLV had a GM fuel filter system.

Fuse Panel Inspection:

The fuse panel was contained inside the driver compartment, right side at the bulkhead location in front of the driver's seat. The fuse panel was severely damaged and consumed by fire and an analysis of the panel/fuses could not be performed.

Area of Fire Origin:

The fire originated in the engine compartment, left side, at the engine exhaust system manifold/header pipe where engine oil was ignited.

Contributing Factors:

The examination indicated the engine sustained a major mechanical failure when a connecting rod pierced the left-side engine crankcase wall. This breach allowed partially atomized engine oil to flow out of the engine and onto the adjacent hot exhaust system components, which caused ignition of the engine oil.

Evidence Collected:

The engine oil filter and an oil sample were sent to the Rimkus Consulting Group, Inc. facility in Charlotte, North Carolina. Oil samples were submitted to Blackstone Laboratory for analysis.

An analysis of the oil sample obtained from the filter indicated the following:

This is the filter sample and there's a lot of metal here. Iron is dominant by far, showing a lot of wear at steel parts. Aluminum is from pistons and chrome is from rings. Copper, lead, and tin together often show bearing wear, though copper could be from any other brass/bronze part. Silicon could show abrasive contamination, especially if the engine was opened for work recently. Potassium and sodium show the presence of coolant and some of the silicon could be from that too. We didn't have enough of the sample to test the viscosity, flashpoint, or insolubles.

An analysis of the oil sample from the pan indicated the following:

The sample from the pan was heavily contaminated with water, so that diluted the wear metals and oil additives significantly. Due to the water, we couldn't measure the viscosity or flashpoint. Enough water was present that it did separate from the oil in the sample bottle. Insolubles show significant oxidized solids due to the presence of water.

Interview:

USPS VMF Manger, provided the following information:

- LLV 1264174 has had about three engine replacements over the years; the last was within 6 months of the fire.
- The engines were supplied by Axiom, and the installation in April, 2015 was by Bannet Auto Service.
- He provided service records for the vehicle.

USPS Carrier, provided the following information:

- He had been driving LLV 1264174 for several years on his rural route of about 30 to 35 miles daily.
- He had been telling his supervisor this was a bad vehicle due to the numerous break-downs and repair needs.
- The day of the fire, he was on his way back to the USPS facility after a 7 hour day making deliveries.
- He was heading west-bound on Highway 8 at about 5:15 p.m., and it was nearly dark.
- Drivers passing him on the highway were honking and pointing at his vehicle.
- He was nearing the Greenfield off-ramp when he noticed smoke coming out from under the hood and the vehicle was losing power.
- He proceeded to the Main Street exit and got off the highway.
- While going down the off-ramp the engine died and the brake pedal went to the floor and the steering got stiff. He rapidly pumped the pedal and was able to pull to the side of the off-ramp and stop.
- He immediately called his supervisor to come and get him.
- He then realized smoke was coming into the driver's cab. He looked outside and saw fire at the right front wheel from his vantage point in the right-side driver seat.

- He immediately took his container of pick-ups and got out. He returned to get more items and then saw flames at the dashboard vents. He returned a third time and fire was inside the driver area. This all happened in less than 30 seconds or so.
- He backed away and then it "blew-up".
- He did not hear anything other than the usual loud rattles the vehicle made prior to the fire. He noted it is fairly noisy in the vehicle when driving.

Service Records:

A review of the service records indicated that the past service and PM was conducted by Automotive Fleet Service, Inc. in San Diego, CA on May 8, 2015. The listed mileage at that time was 145,130. Reference was made to the engine smoking and not starting, also hard start. Other mentioned services included some lamp replacements, transmission mounts, a heater cable, and new side mirror.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

February 16, 2016
RCG File No. 71804436

Photograph 1
LLV 1264174.



Photograph 2
Engine compartment, left side. Hole in engine block, yellow circle.



February 16, 2016
RCG File No. 71804436

Photograph 3

Hole in engine block and damaged crankshaft.



Photograph 4

Hole in engine oil pan, yellow arrow.



February 16, 2016
RCG File No. 71804436

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
5201 Blue Lagoon Drive, Suites 846 and 851
Miami, Florida 33126
(800) 861-7644 Telephone
(954) 428-1849 Facsimile
Certificate of Authorization No. 8301

May 25, 2018

Re: RCG File No: 44000282
LLV Number: 1264356
VMF Location: 1950 W. Oakland Park Blvd. Oakland Park, Florida
Subject: Preliminary/Final Report

Dear

On May 1, 2018, a fire involving USPS LLV 1264356 reportedly occurred during the delivery route at the intersection of Inverrary Boulevard and Inverrary Drive in Lauderhill, Florida. The vehicle was manufactured by Grumman on 09/12/1991; model LLV-A91 RH with VIN 1GBCS10A9N2902393. Rimkus Consulting Group, Inc. was retained to examine the LLV at the Ft. Lauderdale VMF located at 1950 West Oakland Park Boulevard in Oakland Park, Florida.

In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on May 15, 2018. The vehicle examination was conducted by Fire Consultant Robert Hernandez, IAAI-CFI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The vehicle sustained moderate to severe fire damage to the engine and operator compartments from a fire originating within the engine compartment.
2. The area of origin was determined to have been on the mail side of the engine compartment, adjacent to the 2.5 liter, L-4 engine and above the exhaust manifold in the area where braided flexible hose's attached to the fuel supply line.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of an unspecified failure of the fuel line, causing atomized fuel to contact the exhaust manifold directly below the connection point of the fuel line. The atomized fuel ignited on the hot surface and spread to adjacent combustible materials.
4. The rear interior storage mail/compartments was not involved with this fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The front grill and lights of the LLV were observed to be intact with no fire damage. A burn through hole was observed on the hood of the mail side of the engine compartment, from the middle of the compartment towards the bulkhead. The aluminum roof of the vehicle that covered the operator's compartment had melted as a result of the fire. A minor amount of smoke and soot was observed on the side panels of the cargo compartment and moderate fire damage was observed to the ceiling of the cargo compartment, corresponding with fire spread from the direction of the engine and operator compartments.

Fire patterns indicated that the rear, slide-up cargo door had been in the up or open position. Blistering of the paint on the upper part of the door and severe smoke and soot damage was observed on the rear cargo door while no damage at all was observed to the exterior lights and side panels of the rear cargo area. Based on the fire patterns observed, it was determined the fire initiated within the engine compartment then progressed into the operator compartment through the windshield and bulkhead. The driver then opened the rear cargo door to salvage the mail.

Interior Inspection:

The interior cargo area sustained moderate fire, smoke and soot damage. Fire patterns indicated the fire entered cargo compartment through the center opening from the operator's compartment. Moderate fire damage was observed along the ceiling and upper side walls of the cargo space. Fire patterns inside the cargo area confirmed that the rear cargo door had been in the up or open position at the time of the fire. Fire debris from the operator's compartment, including the remnants of a fan, was observed on the floor of the cargo compartment.

The operator's compartment sustained severe fire and heat damage. Most of the combustible materials located within this area were consumed by the fire, including the

fuse panel and various electrical conductors in the dashboard area on the driver's side. However, fire patterns indicated this was the result of the fire's extension from the engine compartment. The most severe damage was observed on the mail side of the compartment, where the bulkhead had completely burned through from the direction of the engine compartment.

Engine Compartment Inspection:

The engine compartment was observed with moderate to severe fire damage. The driver's side contained the brakes master cylinder, battery, alternator, rubber and plastic components and the majority of the electrical conductors within the compartment. However, this side of the compartment sustained mostly minor fire damage. Most of the components were observed to be intact with very little melting. Fire patterns indicated that the moderate damage to the front of the engine compartment, including the radiator, fan blades, pulleys and hoses were caused by radiated heat originating from the center and bulkhead area of the mail side. No evidence was observed of the fire originating within the brakes, wheel hubs or tires in the area of the engine compartment.

The majority of damage to the engine compartment occurred along the mail side of the engine block towards the bulkhead. Fire patterns indicated this was the area of origin. The fuel lines were run through this area after they exited the frame rail towards the carburetor and combustion chamber. The exhaust manifold and pipe leading towards the catalytic converter were positioned directly below the fuel lines. An approximate 5 inch gap was observed between the fuel lines where a braided, flexible hose was connected to the metal fuel line using compression fittings as the fuel line connector. Severe fire damage was observed in this area, including the exhaust pipe below the braided flexible fuel line connection. Fire patterns indicated the fire travelled from this position towards the bulkhead where they extended into the mail side of the operator's compartment.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle, except for a limited area below the engine compartment, above the position of the exhaust manifold. Fire patterns observed on the vertical section of the pipe leading to the exhaust manifold was the lowest area of fire damage. Fuel lines on the undercarriage were intact along the frame rail and were not affected by the fire until they were in a higher position above the exhaust manifold. The overall observation was that the fire began above the undercarriage and more specifically within the engine compartment. All four tires were intact with the exception of the front mail side tire that was observed to be flat, with heat damage observed to a limited area.

Fuse Panel Inspection:

The fuse panel positioned behind the instrument panel in the dashboard sustained severe fire damage. However, no evidence of adverse electrical activity was noted. The respective wiring harness associated with the fuse panel was inspected and did not reveal any unexpected damages from a fire with this intensity.

Fire patterns indicated the damage to the fuse panel was due to the fires extension from the mail side of the engine compartment.

Area of Fire Origin:

The fire originated due to an unspecified failure of the fuel line's braided flexible hose on the mail side of the engine compartment. The exact cause of the failure could not be determined due to the severity of damage to the area. The flex fuel line was consumed by the fire except for a 3 inch section that survived on one of the 2 lines. The compression fittings were observed to be in position; however, they sustained severe fire damage. It could not be determined if the flex hose came loose from the fittings or if there was a failure in the hose. However, fire patterns indicated the probable ignition sequence was leaking fuel in an atomized state igniting after contacting the engine exhaust manifold, associated piping or other hot surface components. The vehicle was running during the event, the operating fuel pressure would normally be 41-47 psi with key on and fuel pump operating.

Potential Contributing Factors:

A review of the USPS service records revealed that service had been conducted on the LLV 1264356 on February 5, 2018, approximately 3 months before the fire. The preventative maintenance included repairing a fuel line near the exhaust manifold. Mr. Gonzalo Barral, supervisor and our contact at the Ft. Lauderdale VMF location stated that the scope of the work to the fuel line involved moving the fuel line because it was too close to the exhaust manifold. The lines were loosened and reconnected on the other side of the hydraulic brakes line that were nearby. The possibility that the fuel line connector vibrated loose after a few months of vibrations was considered as a potential cause of the failure and leak.

Other possibilities considered included a coolant leak causing an overheating event in the engine. However, no evidence was found to support this possibility. A backfire was considered due to the previous service repair for a bad misfire, however the spark plugs were observed to be intact no evidence of a misfire caused fire event was observed. An electrical failure was considered, however the few conductors in the area of origin were observed to have no evidence of adverse electrical activity.

Evidence Collected:

The remaining condition of the components within the area of fire origin would unlikely reveal any relevant data from testing the remnants. There was no evidence collected at this juncture.

Witness Statement:

Multiple attempts to interview the carrier were conducted. No return call was received from the carrier. Per the VMF manager, the carrier stated that at approximately 18:25, he was driving on Inverrary Boulevard when he heard a loud boom noise and the vehicle then shut off. He then saw smoke coming out of the air vents. While he was calling the supervisor, he noticed fire and called 911. He was able to remove all the mail and personal belongings from the vehicle.

Service Records:

The most current service records were obtained and reviewed,

- 02/05/18 REPAIR FUEL LINE NEAR EXHAUST MANIFOLD
- 02/05/18 DIAGNOSE-BAD MISFIRE AND HIGH IDLE. (Cause was a bad vacuum hose)
- 01/05/18 REPAIR BATTERY-LOOSE IN TRAY
- 02/05/18 DRAIN AND FILL RADIATOR-WATER

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Robert Hernandez

Robert Hernandez, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

May 25, 2018
RCG File No. 44000282

Photograph 1

Front view of LLV 1264356.



Photograph 2

Rear view of the vehicle.



May 25, 2018
RCG File No. 44000282

Photograph 3

View of the driver side of the vehicle. Note the direction of fire travel.



Photograph 4

View of the fire patterns on the hood of the vehicle. Note the direction of fire travel.



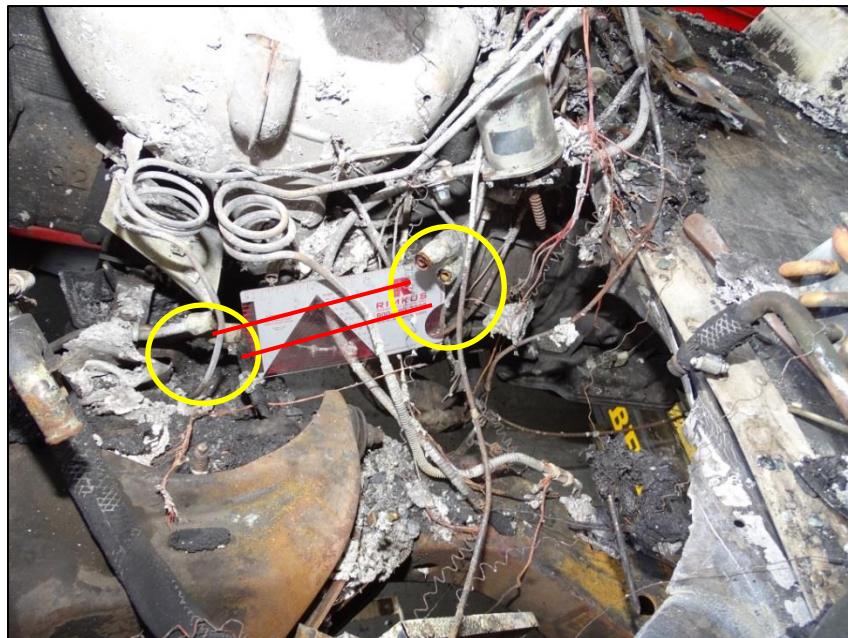
Photograph 5

View from the operator's compartment showing the direction of fire spread. Note the bulkhead was penetrated by the fire on the mail side of the compartment.



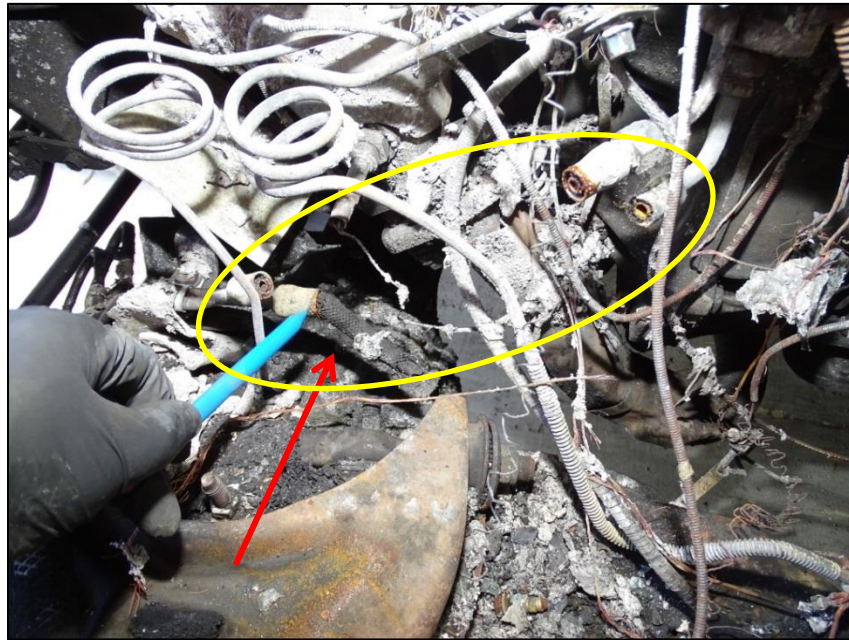
Photograph 6

View of the area of origin. Note the fuel lines and the compression fitting connectors.



Photograph 7

Closer view of the area with the fire damaged braided flexible fuel hose. Note the only remaining segment of the flex hose.



Photograph 8

Closer view of the fuel line compression fittings.



May 25, 2018
RCG File No. 44000282

Photograph 9

View from the underside showing the probable ignition point on the exhaust pipe.



May 25, 2018
RCG File No. 44000282

CVs



ROBERT HERNANDEZ IAAI-CFI, NAFI-CFEI FIRE CONSULTANT

Mr. Hernandez is a 1986 graduate from Miami-Dade College with a degree in Fire Science. He is a Certified Fire Investigator with the International Association of Arson Investigators (IAAI-CFI) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). Mr. Hernandez is a State of Florida licensed Fire Investigator, a State of Florida Licensed Fire Inspector and a State of Florida Licensed Private Investigator. He is a member of Florida Task Force 2 (FLTF2) and has extensive experience in Urban Search and Rescue including Structural Collapse, Confined Space and Vehicle Machinery Extrication. He served the City of Miami for 34 years and was a Lieutenant with the City of Miami's Technical Rescue Team and a Fire Investigator in the City's Fire Investigation Unit. As a member of the Fire Investigation Unit, Mr. Hernandez investigated and determined the origin and cause involving commercial structures, residential structures and vehicles. He collaborated with multiple agencies including the State Fire Marshal, Alcohol, Tobacco and Firearms (ATF), local police, insurance companies and legal agencies during large loss incidents.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.S. – Fire Science - Miami-Dade College, Miami, Florida

EMPLOYMENT HISTORY

2016 – Present	Rimkus Consulting Group, Inc.
2012 – 2016	Casino Miami
2005 – Present	Florida Task Force 2
1981 – 2015	City of Miami Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, NJ 07631
(201) 368-8551 Telephone
(201) 368-8557 Facsimile

Certificate of Authorization No. 24GA28127700

March 7, 2017

Re: RCG File No:

LLV Number: 47809132
VMF Location: 1266540
194 Ward Street in Paterson, New Jersey
Subject: Preliminary/Final Report

Dear

Rimkus New York, PLLC was retained to examine LLV 1266540, VIN 1CBCS10A9N2904502 that was involved in a fire event. The vehicle was examined at the USPS Paterson Vehicle Maintenance Facility located at 194 Ward Street in Paterson, New Jersey. The fire incident reportedly occurred in the area of 486 Route 10 in Randolph, New Jersey on January 11, 2017.

In the course of our work, we examined and documented the fire damaged vehicle on January 25, 2017, and interviewed the carrier/driver. Our work to complete this assignment was performed by Fire Consultant Harold W Henrich, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator compartment of the involved LLV.

2. The specific area of origin was determined to be in and around the dashboard where the electrical wiring harness was routed.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of an electrical failure within the conductors associated with the electrical wiring harness routed behind the dashboard in the area of origin.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a counterclockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire/thermal damage was observed to the front end of the LLV, the hood, windshield and the driver side windshield structural support were consumed during the fire event, with partial fire consumption of both fenders. The cab roof over the driver's side was partially consumed during the fire event. Moderate thermal / soot damage was observed to the upper portions of the doors and sides of the box. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size and manufacturer, the driver's side front tire was partially consumed during the fire event. There is no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured.

Interior Inspection:

Severe fire/thermal damage was observed to the interior operator area. The dashboard and driver side seat upholstery were consumed during the fire event. The mail table showed signs of distortion from the fire event and a small section of the right front table leg was consumed during the fire event. Interior of the box compartment sustained moderate thermal and soot damage.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a General Motors (GM) 2.5L gasoline engine. The LLV was equipped with a GM fuel filter system and an aftermarket fuel filter located on the passenger side of the engine. The fuel system was examined and all metal fuel lines were observed to be intact. All rubber fuel lines located in the engine compartment were partially consumed during the fire event. About 50% of the battery was consumed during the fire event. The positive power cables along with the battery grounding cable were located and traced to their respective origins. Each cable showed thermal damage from fire impingement, with no

adverse electrical activity on either cable observed. Both of the battery connectors were intact. The engine oil, transmission fluid, were examined and observed to be within their normal operating range. Moderate fire damage was observed throughout the engine compartment.

Undercarriage Inspection:

The LLV was mounted on a GM frame which was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the engine/transmission showed no signs of leaking fluids from around the pans. No fire or thermal damage was observed to the undercarriage.

Fuse Panel Inspection:

The fuse panel was consumed during the fire event; only a very small amount of the fuse panel was identifiable within the wiring harness. The interior cab wiring harness was located in the fire debris and sustained severe fire/thermal damage along with the control module.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated at or around the dash board area.

Contributing Factors:

Adverse electrical activity associated with the harness wiring or associated electronic controls could not be eliminated. Mechanical damage and wear and tear could have contributed to the failure.

Evidence Collected:

No evidence was collected at the time of the inspection.

Interview:

On January 27, 2017, a phone interview was conducted with the carrier/driver of LLV 1266540 at the time of the fire. Ms. reported the following information:

- She had been assigned to this LLV for just this day. She further stated they are not permanently assigned to an LLV and can change units each day.

- She stated she had only driven the LLV approximately 30-45 minutes prior to the fire event.
- She stated on the day of the fire that she had no issues with the LLV, and no lights were displayed on the dashboard.
- She stated there was nothing plugged into the cigarette lighter outlet prior to the fire event.
- She stated the heat was on inside the LLV prior to the fire event.
- She stated the events leading up to the fire were as follows: she was driving on her assigned route when she heard a "loud noise" and saw some smoke coming from the vents. She immediately pulled off the side of the road, turned on her hazard lights and called her supervisor to advise she was "broke down". After speaking with the supervisor, she stated the smoke was getting heavier inside the truck so she exited the truck. When she called her supervisor back to inform him the smoke was getting heavier inside the truck, she observed some fire inside the truck. She immediately got away from the truck and called 911.
- Ms. stated that at no time prior to the fire being discovered, did she see any lights on the dash board or experienced any power loss to the LLV.
- Ms. stated she was not injured as a result of the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Harold W. Henrich

Harold W. Henrich, IAAI-CFI (V)
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 7, 2017
RCG File No. 47809132

Photograph 1
Front of LLV.



Photograph 2
Driver's side of LLV.



March 7, 2017
RCG File No. 47809132

Photograph 3
Rear of LLV.

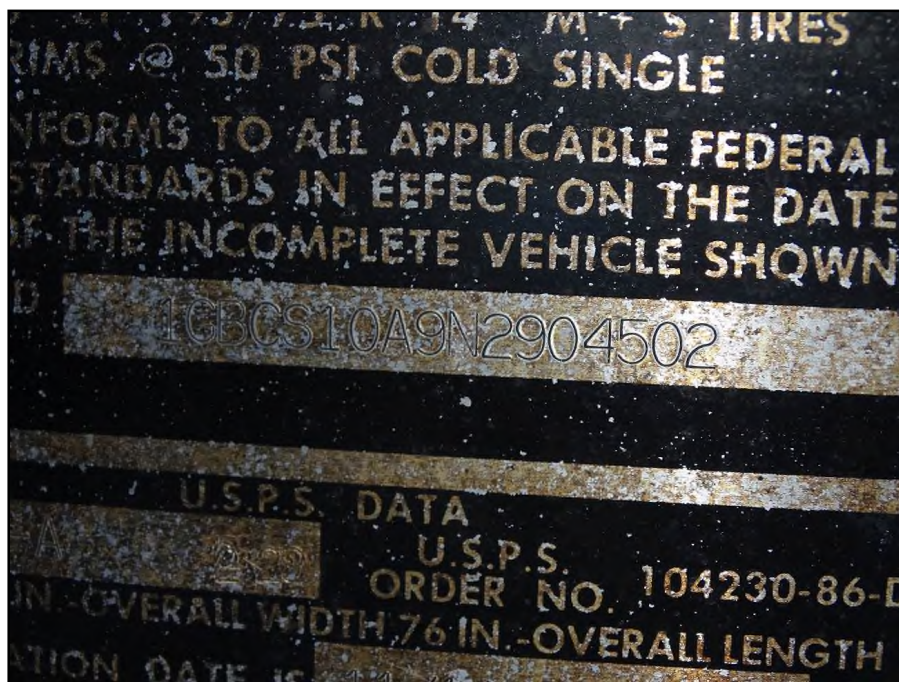


Photograph 4
Mail side of LLV.



March 7, 2017
RCG File No. 47809132

Photograph 5
VIN Plate.



Photograph 6
Engine compartment.



March 7, 2017
RCG File No. 47809132

Photograph 7

View of cab from the front.



Photograph 8

Area of origin.



March 7, 2017
RCG File No. 47809132

Photograph 9
Area of origin.



Photograph 10
Interior wiring harness.



March 7, 2017
RCG File No. 47809132

CVs



HAROLD W. HENRICH, IAAI-CFI, CFEI, CVFI FIRE CONSULTANT

Mr. Henrich is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and a Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators and a Certified Fire Investigator (NC-CFI) with the North Carolina Fire Rescue Commission. He has been active in the fire service for 30 years holding the positions of Firefighter, Captain, Fire Chief and Fire Marshal in both Career and Volunteer Departments.

Mr. Henrich areas of expertise is specializing in origin and cause fire investigations in both the public and private sectors involving over 500 fire causation on commercial, residential structures, vehicles and heavy construction equipment. He has completed and maintains state, national and international certifications as a Fire Investigator, Fire Instructor, Fire Inspector, Fire Officer, Fire & Life Safety Educator, Hazardous Materials, Firefighter, and completed numerous educational seminars and continuing education courses in the field of fire investigation.

Mr. Henrich while serving in the capacity of a Fire Instructor has coordinated and instructed continuing education courses within the Fire Service field and basic Fire Investigation classes.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Candidate, Columbia Southern University, Orange Beach, AL, B.S Fire Administration / Fire Investigation

International Association of Arson Investigators

Certified Fire Investigator, 2014

Expert Witness Court Room Testimony, 2014

National Association of Fire Investigators

Certified Fire and Explosion Investigator (CFEI), 2010

Certified Vehicle Fire Investigator, (CVFI), 2010

National Board on Fire Service Professional Qualification

Fire Investigator, NFPA 1033-2014, 2014

North Carolina Fire and Rescue Commission

Certified Fire Investigator, 2005

Fire Inspector Level III, 2012

Fire Life Safety Educator III, 2009

Fire Instructor II, 2001

Fire Officer II, 2005

Firefighter II, 1994

Hazardous Materials Level I, 2000

Hazardous Materials, Personal Protective Equipment, 2011

Hazardous Materials, Technical Decontamination, 2011

Hazardous Materials, Air Monitoring & Sampling, 2012



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus North Carolina, PLLC
5900 Harris Technology Blvd, Suite P
Charlotte, North Carolina 28269
(704) 896-6227 Telephone
(704) 896-6228 Facsimile
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2018

February 8, 2018

Re: RCG File No: 47108478
LLV Number: 1266705
VMF Location: 2901 Scott Futrell Drive in Charlotte, North Carolina
Subject: Preliminary/Final Report

On January 11, 2018, a fire occurred involving LLV 1266705 at 4427 Brookshire Boulevard in Charlotte, North Carolina. On January 17, 2018, Rimkus Consulting Group, Inc. was retained to examine LLV 1266705, VIN 1GBCS10A4N2904696. The LLV was a 1991 Grumman with a GM chassis.

On January 31, 2018, we conducted an examination of the LLV at the Charlotte, North Carolina vehicle maintenance facility located at 2901 Scott Futrell Drive in Charlotte, North Carolina. In the course of our work, we examined the vehicle, excavated fire debris, documented with photos, and interviewed the maintenance manager. Our work to complete this assignment was performed by Fire Consultant Van D, Tuley, IAAI-CFI (V). A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was at the left front corner of the engine compartment where the vapor canister for the EVAP system had been located.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of an unspecified failure of the vapor canister for the EVAP system, resulting in the escaping gasoline vapors being ignited by the hot engine surface and/or the exhaust manifold.

Observations

Exterior Inspection:

Examination of the exterior commenced on the front exterior and continued in a clockwise direction. Severe fire damage was observed to the front grill assembly in the area of the left head light. There were no remains of the hood covering found in or on the vehicle. Severe fire damage was observed to both the left and right front fenders. The aluminum top of the vehicle that covered the driver's compartment had melted as a result of the fire. The cargo area of the vehicle was intact.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage throughout the driver's compartment of the vehicle. All combustible materials in the area of the dashboard and driver's seat had been consumed by the fire. The aluminum mail sorting tray located next to the driver's seat had melted on the side nearest the engine compartment.

Engine Compartment Inspection:

Severe fire damage was observed throughout the engine compartment. The LLV was equipped with a 2.5L fuel injected engine. All combustible material within the engine compartment, to include belts and hoses, had been consumed by the fire. Severe fire

damage was observed in the left front corner of the engine compartment, directly behind the left headlight assembly. This location is where the vapor canister for the evaporative emission control system (EVAP) had been located. There were no remains of the vapor canister found in the fire debris. A small mound of charcoal was present on the frame directly below where the vapor canister had been located. The fire damage observed throughout the engine compartment was consistent with the fire originating at the vapor canister for the EVAP system and progressing throughout the engine compartment.

Undercarriage Inspection:

Examination of the undercarriage of the LLV revealed fire damage in the area of the engine compartment that was consistent with dropdown from a fire originating in the engine compartment.

Fuse Panel Inspection:

The fuse panel had sustained severe fire damage. The condition of the fuses within the panel could not be determined due to the severe fire damage.

Area of Fire Origin:

The fire originated at the left front corner of the engine compartment, directly behind the left front headlight assembly. The vapor canister for the EVAP system had been located in this area.

Contributing Factors:

The fire was the result of an unspecified failure of the vapor canister for the EVAP system. Since the vapor canister and associated vapor lines attached to the vapor canister had been destroyed, we were unable to determine if the failure was in one of the vapor lines or the vapor canister. The escaping gasoline vapors were then ignited by the hot engine surface and/or the exhaust manifold.

Evidence Collected:

No physical evidence was collected from the LLV.

Interviews

The mail carrier that was operating the LLV at the time of the incident indicated that the LLV made a “popping noise”, so he shut it off to make a delivery at a business. He then indicated that he returned to the LLV, started it and again heard a “popping noise” coming from the engine compartment, and he then observed smoke and fire coming out from under the hood.

Service Records

A review of the service records for LLV 1266705 revealed that the last preventative maintenance was conducted on August 29, 2017. No recent repairs or service was noted that would have contributed to the cause of the fire.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NORTH CAROLINA, PLLC

Van D. Tuley

Van D. Tuley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

February 8, 2018
RCG File No. 47108478

Photograph 1
Front view of LLV 1266705.



February 8, 2018
RCG File No. 47108478

Photograph 2
Rear view of the LLV.



Photograph 3

Location where the vapor canister for the EVAP system had been located.



Photograph 4

Charcoal on the frame below the area where the vapor canister had been located.



February 8, 2018
RCG File No. 47108478

CVs



VAN D. TULEY, IAAI-CFI FIRE CONSULTANT

Mr. Tuley is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators. Mr. Tuley is a Licensed Private Investigator in North Carolina, South Carolina, and Georgia. He served as a Special Agent with the United States Department of Justice Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) for over twenty four years, the last fifteen years as a Certified Fire Investigator (ATF-CFI). As an ATF-CFI he responded to approximately five-hundred fire scenes, to include residential and commercial structures. Mr. Tuley was also a member of ATF's National Response Team (NRT) for approximately sixteen years, responding to major fire and explosion losses throughout the United States. He has completed numerous educational seminars and classes in the field of fire investigation throughout his career. He has testified as an expert witness in both Federal and State court proceedings as well as depositions involving the investigation of fires.

Mr. Tuley has coordinated and instructed continuing education training seminars in fire investigation for State and Local fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Tuley has also instructed and given presentations in Fire Investigation and Fire Dynamics for the American Academy of Applied Forensics, the North Carolina Chapter of the International Association of Arson Investigators (NCIAAI), and local community colleges; Report Writing and Scene Documentation for the North Carolina Chapter of the International Association of Arson Investigators; Arson Investigation and the Science of Fire, Forensics for Criminal Litigators, at the National Advocacy Center in Columbia, South Carolina; Explosions and Explosives for the Fire Engineering Technology Program at the University of North Carolina at Charlotte; as well as numerous classes on Explosives Recognition, Responding to an Explosive Incident, and Processing Explosive Scenes to State, Local and Federal investigators. Mr. Tuley has also been an instructor for fire and explosive related classes at the Federal Law Enforcement Academy in Glynco, Georgia.

Mr. Tuley has over thirty years of combined investigative experience as a Police Officer and Detective for the Portage, Indiana Police Department and as a Special Agent with the Bureau of Alcohol, Tobacco, Firearms and Explosives.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

University of Evansville, Evansville, Indiana
Bachelor of Science in Law Enforcement - 1977

University of Evansville, Evansville, Indiana
Master of Science in Criminal Justice - 1979

Indiana Law Enforcement Training Academy, Plainfield, IN.
Basic Law Enforcement Academy - 1979



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2550 Corporate Exchange Drive, Suite 24
Columbus, OH 43231
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

February 9, 2016

Re: RCG File No: 53601750
LLV Number: 1266820
VMF Location: 3055 Crescentville Road in Sharonville, Ohio
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 1266820 that occurred at Nilles Road and Sandy Lane in Fairfield, Ohio on November 23, 2015. In the course of our work, we examined and documented the fire-damaged vehicle, and interviewed the carrier/operator on December 7, 2015.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 3055 Crescentville Road in Sharonville, Ohio. In the course of our work, we inspected and photographed the vehicle, reviewed maintenance and repair records and completed witness interviews. The work to complete this assignment was performed by Fire Consultant John W. Gray, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the left side of the engine (facing forward) in the area where a piston rod was propelled through the engine oil pan.

3. The specific ignition sequence and cause of the fire was the direct result of a piston rod being propelled through the oil pan and potentially dislodging a fuel line causing ignitable engine fluids to come in contact with a hot surface of the operating vehicle and ignite the vapors produced.

Observations

Exterior Inspection:

The exterior examination of the vehicle revealed evidence of severe fire damage primarily concentrated in the area of the engine compartment. We observed a large hole burned through the aluminum engine hood. The windshield was fractured as a result of the fire. The left front tire (facing forward) was fire damaged and was "flat."

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments revealed evidence of severe fire damage primarily concentrated in the forward portion of the compartment. We observed a large opening burned through the bulkhead separating the engine and passenger compartments on the left side of the vehicle. There was smoke and heat damage observed throughout passenger and cargo compartments.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment indicated that the fire originated on the left lower side of the compartment. The combustible material in this area was largely consumed including plastic and rubber components. The vehicle was equipped with a Wheeler fuel filter. We checked levels for the engine oil and transmission fluid. The transmission fluid was within normal limits; however, the engine oil level indicated little to no oil in the engine.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence that a catastrophic engine failure had occurred. We observed that a piston connecting rod had broken and had been propelled through the left side of the engine oil pan. The piston rod struck and dislodged a fuel line from a fitting on the left side of the engine. We observed fire patterns that indicated the fire originated in this area. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

Examination of the fuse panel located within the operator's compartment revealed no evidence of soot, smoke, heat or fire damage. Individual fuses were checked and it was observed that four fuses were opened or "blown." The "blown" fuses included a 20 amp

fuse labeled "Tail Lps", a 20 amp fuse labeled "Wiper", a 15 amp fuse labeled "Haz", and a 10 amp fuse labeled "ECMB".

Area of Fire Origin:

The area of fire origin was determined to be on the left side of the engine (facing forward) in the area where a piston rod was propelled through the engine oil pan. There was evidence of engine oil becoming displaced from the crankcase under pressure which came in contact with the heat of the exhaust manifold on the operating vehicle.

Contributing Factors:

The broken piston rod dislodged a fuel line from a fuel fitting which allowed gasoline to escape the fuel line and engine oil to escape onto the hot surface of the operating unit potentially contributing to the fuel load.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interviews:

We spoke with the vehicle driver (postal carrier), via telephone. She stated she was driving the vehicle on November 23, 2015, at approximately 6:30 P.M. when she approached the intersection of Nilles Road and Sandy Lane in Fairfield, Ohio. She stated she was alerted by a passerby that the vehicle was on fire. She stated she got out of the vehicle at which time she observed a liquid leaking under the engine compartment and sparks coming from the area. She stated she noticed no problems with the vehicle prior to the fire occurrence.

Service Records:

A review of service provided service records indicated that the last service was performed prior to the fire on October 6, 2015, at House's Towing, LLC in Hamilton, Ohio. The listed mileage at the time of service was 98,580. The performed service does not appear to be associated with the cause of the fire. The service record is attached to this report.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

John W. Gray

John W. Gray, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, Service Records, CVs

February 9, 2016
RCG File No. 53601750

Photograph 1

Front view of the vehicle.



Photograph 2

Examination of engine passenger compartment.

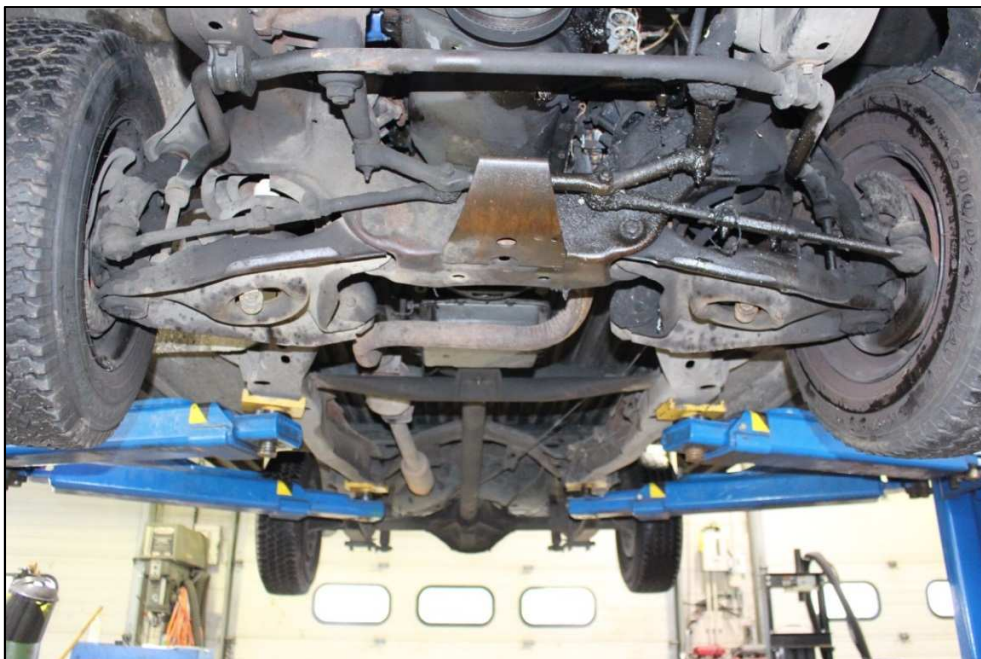


February 9, 2016
RCG File No. 53601750

Photograph 3
Examination of engine compartment.



Photograph 4
Examination of the undercarriage.



February 9, 2016
RCG File No. 53601750

Photograph 5

View of the broken piston rod (area of origin).



Photograph 6

View of the frame rail on subject vehicle.



February 9, 2016
RCG File No. 53601750

Photograph 7

View of the fuel filter on the subject vehicle.



February 9, 2016
RCG File No. 53601750

Service Records

House's Towing LLC

1950 Benninghofen Avenue
Hamilton, OH 45015
(513) 867-0455

Invoice

Number: 17274

Date: October 06, 2015

Bill To:

U.S Postal Service

Ship To:

U.S Postal Service

15341668

Vehicle	Mileage	VIN #	License #	Payment
1266820	98,580			

Description	Quantity	Price	Tax	Amount
Turn Signal Switch ORIE-BWD S3233	1.00	45.00		45.00
Labor - T2	1.00	75.00		75.00
Brakes (Front) ORIE-MX154	1.00	48.82		48.82
Caliper Bolt P-N 18022602	4.00	5.22		20.88
Caliper Bushing Kit P-N 18008106	1.00	6.28		6.28
Can of cleaher	1.00	5.95		5.95
Labor - T2	1.00	75.00		75.00
Battery Hold Down P-N 85608021 *** (Jeff)	1.00	0.00		0.00
Check Rear Brakes, Remove Dust and Adjust - T2	0.50	75.00		37.50
Jasper Transmission Product # 782847 Stock # 5881904	1.00	0.00		0.00
Automatic Transmission Fluid ***	9.00	0.00		0.00
Transmission Mount P-N 17982949 *** (Mike)	1.00	0.00		0.00
Labor - T2	4.00	75.00		300.00
Transmission Cooler Kit P-N 4L60PCK *** (Mike)	1.00	0.00		0.00
Labor - T2	1.00	75.00		75.00

Thank you for your business.

ENTERED NOV 17 2015

ED

House's Towing LLC

1950 Benninghofen Avenue
Hamilton, OH 45015
(513) 867-0455

Invoice

Number: 17274

Date: October 06, 2015

Bill To:

U.S Postal Service

Ship To:

U.S Postal Service

Vehicle	Mileage	VIN #	License #	Payment
1266820	98,580			

Description	Quantity	Price	Tax	Amount
Shop Supplies	1.00	5.00		5.00
*** Post Office Supplied Parts. ***				
Sub-Total				\$694.43
State Tax 6.50% on 0.00				0.00
Total				\$694.43

Thank you for your business.

HOUSE'S TOWING MIDH VX39027664001
1950 BENNINGHOFFEN
HAMILTON OH 45015

PRODUCT GEN AUTO MERCH QTY PRICE AMOUNT
TAX 0.00
SEQ# 003202 ~~10/06/2015~~

AVTHH 407403
*****X5947 VOYAGER
CREDIT SALE 10/07/15 07:08
ODOMETER: 98530 DRIVER ID: *****
APPROVED 407403

THANK YOU FOR YOUR PURCHASE TODAY!
PLEASE COME AGAIN

CUSTOMER COPY

ENTERED NOV 17 2015
[Signature]

February 9, 2016
RCG File No. 53601750

CVs



**JOHN W. GRAY C.F.I., C.V.F.I.
FIRE CONSULTANT**

Mr. Gray is a Certified Fire Investigator (CFI) through the International Association of Arson Investigators and a Certified Vehicle Fire Investigator (CVFI) through the National Association of Fire Investigators. He is also certified as a Fire Investigator I by the State of Indiana. Mr. Gray was honorably retired after a 25-year career as a police officer with the Marion County Sheriff's Department in Indianapolis.

Since joining Rimkus Consulting Group in March 2005, Mr. Gray has performed hundreds of fire investigations for insurance companies, law firms, and property owners. His professional experience includes residential, commercial, and vehicle fire origin and cause investigation. Mr. Gray has testified in matters regarding fire origin and cause in both civil and criminal proceedings.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator (CFI) International Association of Arson Investigators
Certified Vehicle Fire Investigator (CVFI) National Association of Fire Investigators
Certified Fire Investigator I State of Indiana
Certified Law Enforcement Officer (Retired) State of Indiana
Licensed Private Investigator (IN-IL-OH-KY-MI-PA-LA)

Member of: International Association of Arson Investigators (IAAI)
International Association of Arson Investigators (Indiana Chapter # 14)
National Association of Fire Investigators (NAFI)

EMPLOYMENT HISTORY

2005 – Present	Rimkus Consulting Group, Inc.
1980 – 2005	Marion County (Indiana) Sheriff's Department.
1974 – 1980	McCormick/All Portions Inc.



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
5900 Harris Technology Boulevard, Suite P
Charlotte, North Carolina 28269
Telephone: (704) 896-6227
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2020

February 11, 2020

Re: RCG File No: 100023391
LLV Number: 1267671
VMF Location: 4603 Dairy Drive Greenville, South Carolina
Subject: Preliminary/Final Report

On December 26, 2019, a fire involving USPS LLV 1267671 reportedly occurred during the delivery route at the address of 2102 Old Spartanburg Road in Greer, South Carolina. The vehicle was manufactured by Grumman in 1991, model LLV-91 RH. Rimkus Consulting Group, Inc. was retained to examine LLV 1267671 with VIN 1GBCS10A4N2905718, at the Vehicle Maintenance Facility located at 4603 Dairy Drive in Greenville, South Carolina.

In the course of our work, we examined, documented, and photographed the fire damaged vehicle, reviewed the vehicle repair and maintenance records, and interviewed the carrier that was driving the LLV at the time of the fire incident, on January 8, 2020. The vehicle examination was conducted by Fire Consultant Van D. Tuley, IAAI-CFI (V). A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The vehicle sustained moderate fire damage to the left side of the engine compartment and the left side of the bulkhead.

2. The area of origin was determined to be at the blower motor and housing that was mounted in the left side of the bulkhead.
3. The specific ignition sequence and cause of the fire was determined to be an unspecified failure of the blower motor. Due to the severe fire damage and lack of remaining physical evidence, the specific failure of the blower motor was inconclusive.

Observations

Exterior Inspection:

Examination of the exterior of the LLV revealed moderate fire damage to the left side of the hood and top of the left front fender. No other fire damage was observed on the exterior of the vehicle.

Interior Inspection:

Examination of the interior of the LLV revealed moderate fire damage to the left side of the bulkhead, in the area where the blower motor had been mounted in the bulkhead. Melted plastic was observed on the left floorboard. The fire damage remains of the blower motor was observed on the left side floorboard, and the electrical wiring was still attached to the blower motor. The electrical wiring was intact and free of fire damage.

Engine Compartment Inspection:

Examination of the engine compartment revealed moderate fire damage to the left side of the bulkhead where the blower motor had been mounted. A portion of the plastic housing for the blower motor had melted and fell onto a wiring harness, burning the insulation around the electrical conductors in the wiring harness. The heater core positioned to the left of the blower motor had also sustained fire damage to the side closest to the blower motor. A plastic fluid reservoir located in the front left corner of the engine compartment had melted. The vehicle was equipped with a 2.5 liter four-cylinder engine with standard ignition coil.

Undercarriage Inspection:

No visible fire damage was observed to the undercarriage of the vehicle. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel was mounted on the right side of the bulkhead, beneath to the right of the steering column. The fuse panel was intact and free of fire damage. Examination of the fuses revealed that all the fuses were intact and none were blown.

Area of Fire Origin:

The fire originated on the left side of the bulkhead, where the blower motor was mounted in the bulkhead.

Potential Contributing Factors:

An internal failure of the blower motor may have been a contributing factor to the cause of the fire.

Evidence Collected:

The remains of the blower motor were collected and are being retained at the Charlotte Rimkus Consulting Group, Inc. office located at 5900 Harris Technology Boulevard in Charlotte, North Carolina.

Interviews:

On January 8, 2020, an interview was conducted with the carrier who was driving the LLV at the time of the fire incident. Ms. stated that she had only been driving the vehicle for a few miles and was on her way to meet another carrier to pass on some mail for that carrier to deliver, when she noticed smoke coming from the hood of the vehicle. She stated that smoke also started coming into the passenger compartment. She stated that when she met the other carrier in the parking lot of a service station, the other carrier looked inside the LLV and saw that the temperature gauge was reading hot. Ms. stated that she had left the LLV running and was calling her supervisor to advise them of the issue with the vehicle, when she started seeing a heavier concentration of smoke coming from the engine compartment, and something dripping underneath the vehicle. She stated that they then saw fire under the left side of the hood.

Service Records:

A review of the maintenance and repair records for the LLV revealed that a Preventative Maintenance had just been completed on the vehicle and the vehicle had been driven approximately four times after the Preventative Maintenance when the fire incident occurred. The maintenance and repair order do not reflect any issues or repairs pertaining to the blower motor.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to

determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Van D. Tuley

Van D. Tuley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

February 11, 2020
Rinkus File No. 100023391

Photograph 1
Front view of the vehicle.



Photograph 2
Right side of the vehicle.



Photograph 3
Rear of the vehicle.



Photograph 4
Left side of the vehicle.



Photograph 5

Fire damage to the engine compartment where the blower motor had been mounted.



Photograph 6

Damage to the interior bulkhead where the blower motor had been mounted.



Photograph 7
Remains of the blower motor and housing.



Photograph 8
Remains of the blower motor and housing.



February 11, 2020
Rinkus File No. 100023391

Curriculum Vitae



Van D. Tuley, IAAI-CFI

Fire Consultant
Fire Division/Charlotte District

Background

Mr. Tuley attended the University of Evansville, where he earned his M.S. degree in Criminal Justice and his B.S. degree in Law Enforcement. Mr. Tuley has over 30 years of combined investigative experience as a police officer and detective for the Police Department in Portage, IN, and as a special agent with the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). He is a Certified Fire Investigator (CFI) through the International Association of Arson Investigators (IAAI) and a licensed private investigator in multiple states. In addition, he has testified as an expert witness in both federal and state court proceedings as well as depositions involving the investigation of fires.

As a forensic consultant, Mr. Tuley specializes in the determination of the origin and cause of fires and explosions involving residential and commercial structures, as well as cases involving motor vehicles and other conveyances. He also is responsible for coordinating logistics during multi-party examinations for large-loss investigations.

Prior to joining Rimkus, he worked with the ATF for over 24 years. During the last 15 years of his tenure he responded to approximately 500 fire scenes as an ATF-CFI, including residential and commercial structures. He was also a member of the ATF's National Response Team for approximately 16 years, responding to major fire and explosion losses throughout the U.S as a Certified Explosives Specialist.

Throughout his career, Mr. Tuley has coordinated and instructed continuing education training seminars in fire investigation for state and local fire investigators and law enforcement personnel tasked with the investigation of fire and explosion incidents. To stay up-to-date on the latest developments in his fields of expertise, he is an active member of IAAI (the national organization as well as the North Carolina and South Carolina chapters).

Contact Information

(704) 896-6227

vdtuley@rimkus.com

5900 Harris Technology Blvd.,
Suite P
Charlotte, NC 28269



Rimkus Consulting Group, Inc.
7851 Woodland Center Boulevard
Tampa, Florida 33614
Telephone: (813) 289-3060
Certificate of Authorization No. 8301

January 6, 2020

Re: RCG File No: 100021383
LLV Number: 1267750
VMF Location: 3135 1st Avenue N. St. Petersburg, Florida
Subject: Preliminary/Final Report

On December 4, 2019, a fire reportedly occurred during a normal delivery day at 9400 49th Street North in Pinellas Park, Florida. Rimkus Consulting Group, Inc. was retained to examine the 1991 LLV 1267750 with VIN 1GBCSI0A5N2905727.

In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders. The vehicle examination was conducted by VP of Fire Division Thomas Young, IAAI-CFI (V). A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The inspection revealed a defined area of origin revealed at the undercarriage on the vehicle.
2. The specific area was at the flexible portion of the supply fuel line between the fuel filter and the ridged supply at the left side of the transmission.
3. The ignition sequence was determined to be an event involving the flexible fuel line. Both ends of this fuel line appeared to be intact with double clamps. The portion that was burned away likely experienced failure allowing gasoline to contact hot engine components and ignite.

Observations

Exterior Inspection:

The exterior examination of the fire-damaged vehicle commenced from the rear of the LLV and continued in a counter-clockwise rotation. The inspection revealed that the vehicle sustained minor fire damage confined to the undercarriage. Fire patterns were consistent with a fire that originated within the undercarriage and spread towards the rear of the vehicle with minimal extension into the engine compartment.

Interior Inspection:

There was no outward indication of fire extension into the interior compartment. The dashboard and related wiring harness and fuse box were visually inspected, and no anomalies were observed.

Engine Compartment Inspection:

The engine compartment had sustained some minor thermal deformation to some of the local wiring insulation and loom consistent with a flash fire involving the fuel event as indicated. The vehicle was equipped with a 2.5 liter four-cylinder engine with a standard ignition coil.

Undercarriage Inspection:

The undercarriage inspection revealed damage stemming from the flexible fuel line location near the left side of the transmission. From that area, some of the local wiring had sustained minor thermal impact from the fire. The wiring routed along the frame rail to the fuel tank had sustained thermal damage from fire attack. The wiring within the determined area of fire origin was eliminated as a causal factor to the ignition sequence. The vehicle was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel and other component harness's such as the circulating fan and headlamp switch were pristine. No indication of thermal deformation was observed under the dash, in or around the primary harness and other wiring.

Area of Fire Origin:

Based on the overall inspection, the determined area of fire origin was at the fuel supply line between the two rigid fuel lines at the left side of the transmission. The fuel lines were removed and inspected closer revealing the line remained clamped at each point

with dual clamps. The section of flex fuel line was burned away with no remains or identification.

Potential Contributing Factors:

The event involving the flexible fuel line portion can't be conclusively determined due to the fact it was entirely burned away. The root cause to its failure mechanism can only be inferred as a mechanical or environmental contributor. (Meaning an external mechanical impact such as routing through clamps or metal supports and associated vibratory force or age of the hose).

Evidence Collected:

The remains of the threaded fuel connections and worm gear clamps were removed and inspected in the field. The respective connections were tight, and the evidence was secured. At this time, there is no further analysis anticipated to be performed on the evidence.

Interviews

On December 12, 2019, during an interview with the carrier he said that he was told by his sub-driver that drove this vehicle the day before he thought he had smelled gasoline. He stated that he started the vehicle and did his morning safety check, he noted nothing unusual. He proceeded out of the facility and stopped to fill fuel at a nearby 7-11 fuel station. Once he got back on the road, he had witnessed flames momentarily come up from the dash, in addition, someone tried to wave him to stop. Apparently, the witness saw fire underneath the vehicle. The carrier was unaware. The vehicle had no warning lights or symptoms of operational issues.

The Pinellas Park fire department was very close by; they had responded and extinguished the vehicle very quickly. Several attempts to get a copy of the fire report were made but have not received a copy as of this report.

Service Records:

12/04/19 - Vehicle was towed following the fire.

08/19/19 - Vehicle PM.

01/22/18 - Head lamp switch replaced.

07/24/17 - Spin on fuel filter replaced. No indication if fuel lines were inspected and/or changed as a routine matter during a fuel filter change out.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Thomas W. Young

Thomas W. Young, IAAI-CFI (V)
VP Fire Division

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

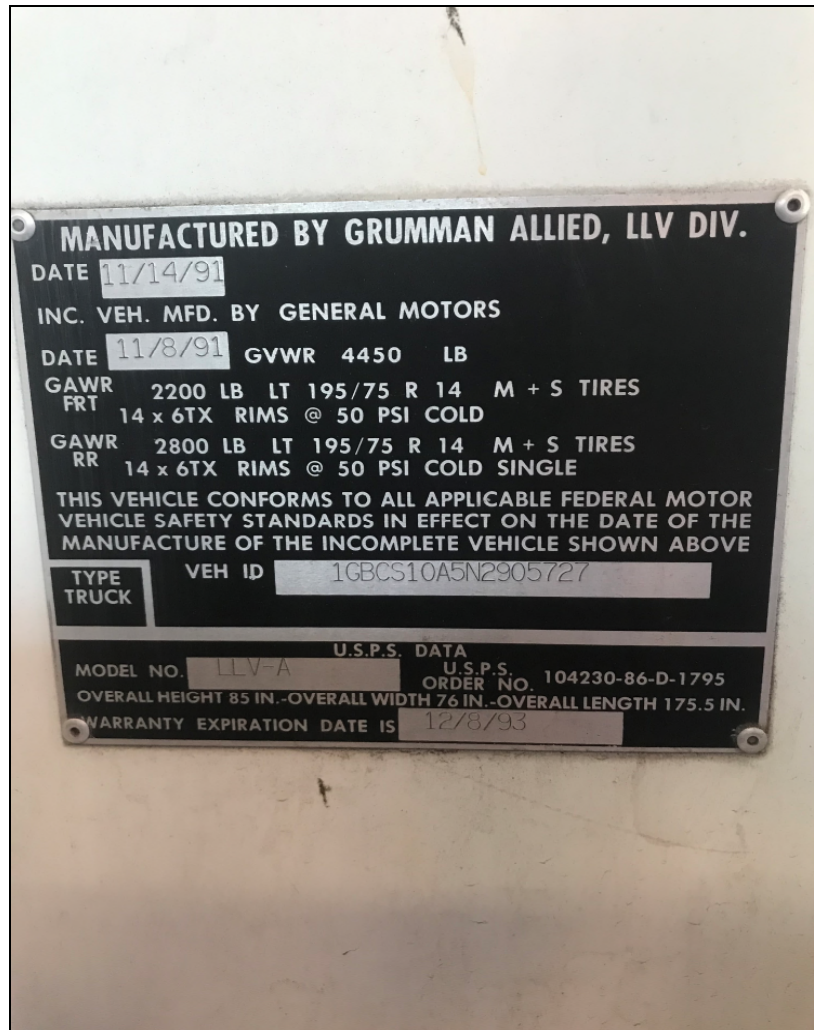
January 6, 2020
Rinkus File No. 100021383

Photograph 1
Rear view of vehicle.



January 6, 2020
Rimkus File No. 100021383

Photograph 2
VIN Plate.



January 6, 2020
Rimkus File No. 100021383

Photograph 3
Fuel filter (replaced 7/24/17).

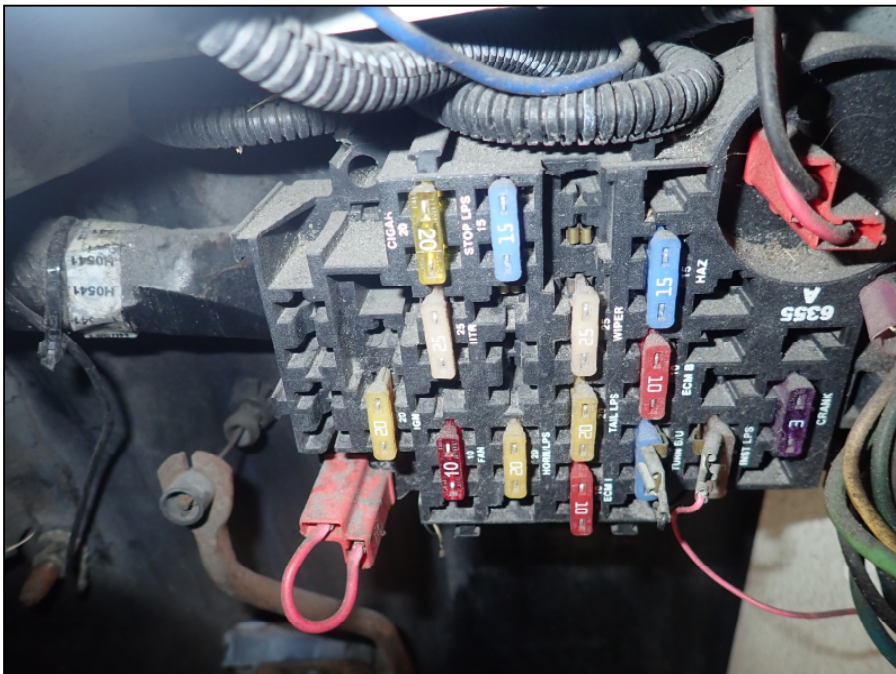


January 6, 2020
Rimkus File No. 100021383

Photograph 4
Engine compartment with collateral thermal damage.



Photograph 5
Fuse block.



January 6, 2020
Rimkus File No. 100021383

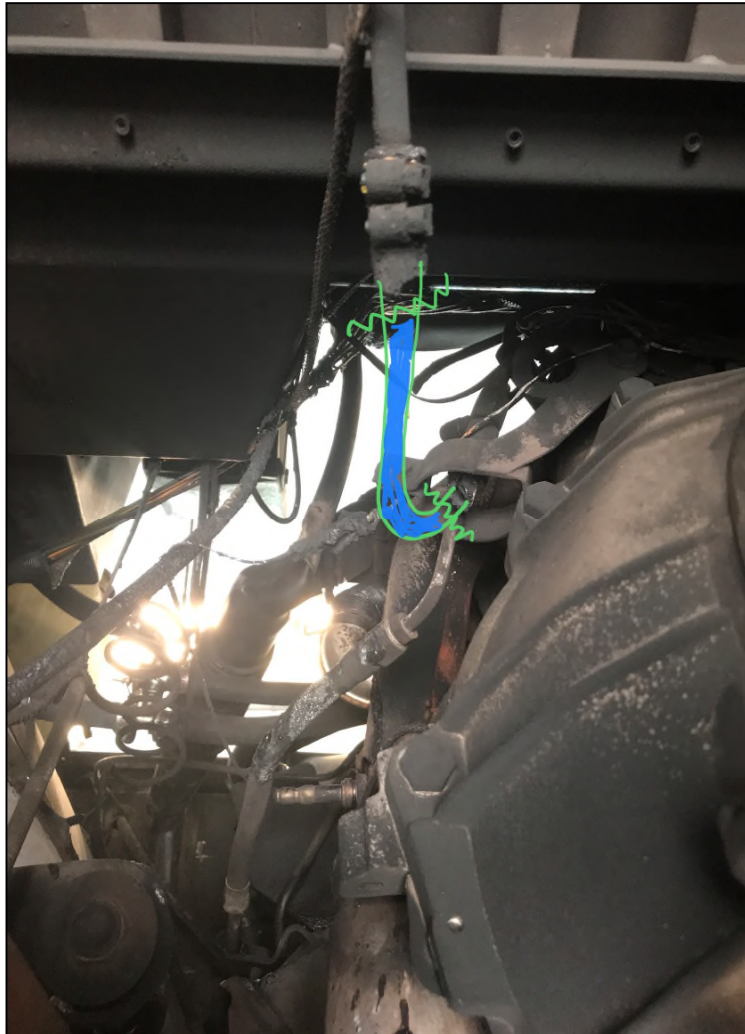
Photograph 6

Fuel line along frame rail illustrating typical dual clamp connection.



January 6, 2020
Rimkus File No. 100021383

Photograph 7
Location of event (fire origin).



Photograph 8

Close view of fuel supply connectors.



Photograph 9

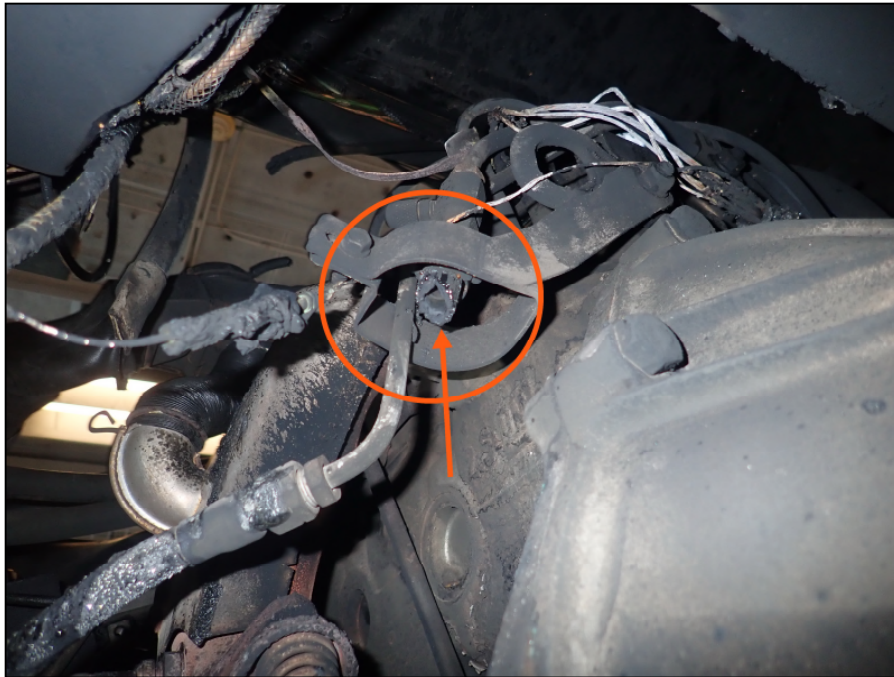
View of fuel hose failure location.



January 6, 2020
Rimkus File No. 100021383

Photograph 10

Secondary view of fuel line failure location.



January 6, 2020
Rinkus File No. 100021383

Curriculum Vitae



Thomas W. Young, IAAI, CFI,(V) CFEI, CFII

Vice President
Fire Division (Officer)

Background

Mr. Young has completed and maintains state national and international certifications as Fire Investigator, Fire Investigator Instructor, Fire Inspector, Fire Officer, and Basic Fire Instructor. He has also authored fire safety articles in fire engineering publications, as well as firehouse and local municipality newsletters. He participates in, designs, and instructs educational seminars and continuing educational courses. He has conducted Live Burn Testing to include appliances, vehicles, and closed room fire tests and studies.

Mr. Young's professional career includes 27 years with St. Petersburg Fire and Rescue. In that capacity, he has been involved in many different emergency service positions including Fire Fighter, Driver Engineer, Station/Line Officer, Public Information Officer, Community Affairs Director, Deputy Fire Marshal and Fire Investigations Task Force Supervisor. As a Florida State Certified Fire Inspector, he oversaw code compliance, crowd management, fire safety analysis, special events, safety management, commercial and industrial fire emergency operations and reviewing fire contingency plans. Mr. Young supervised the origin and cause efforts for the St. Petersburg Fire and Rescue for over 10 years. He has testified as an expert witness in court cases and has testified before a Grand Jury. He has also been involved in special projects such as juvenile fire setters, an educational intervention program that through a committee based approach he was instrumental in developing. He has served as the department's shipboard firefighting Instructor. He has a strong marine, automobile and heavy equipment investigative background. Mr. Young has been recognized for his achievements by being the recipient of awards that include, Fire Officer of the Year, and The State of Florida's, Florida Fire Marshals Public Educator of the Year.

Currently, Mr. Young oversees the fire investigation efforts, which include training, hiring, and supervising a team of highly trained and experienced fire consultants. He maintains state private investigator licenses as the Business and Compliance Manager in multiple states.

Contact Information

(813) 289-3060
twy@rimkus.com

7851 Woodland Center Blvd.
Tampa, FL 33614



Rimkus Consulting Group, Inc.
10 Kimler Drive Suite G
Maryland Heights, Missouri 63043
Telephone: (888) 286-0127

August 15, 2019

Re: RCG File No: 100008954
LLV Number: 1268424
VMF Location: 10899 Indian Head Industrial Boulevard St. Louis, Missouri
Subject: Preliminary/Final Report

A fire reportedly occurred on July 11, 2019, involving a 1992 Grumman LLV. At the time the fire occurred the vehicle was located at an unspecified section of Collinsville Road in East St Louis, Illinois. Rimkus Consulting Group, Inc. was retained to examine LLV 1268424, VIN 1GBCS10A3N2906441. This report was reviewed by David R. Meyers, IAAI-CFI (V), Technical Fire Manager.

In the course of our work, we inspected and photographed the vehicle, excavated fire debris, completed an arc analysis, obtained a laboratory analysis of the engine oil, and completed witness interviews.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations" and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated within the engine compartment of the involved LLV.
2. A more specific area was along the mail side of engine at the exhaust manifold.
3. The first fuel ignited was fugitive engine oil that contacted the exhaust piping.
4. The ignition source was heat associated with the exhaust system of the internal combustion gasoline engine.

5. The specific ignition sequence and cause of the fire was a direct result of a mechanical failure within the engine which created a hole in the mail side of the engine block. The fugitive engine oil contacted the hot surface of the exhaust piping in proximity to the hole in the engine block.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The four exterior sides of the vehicle were unremarkable, with respect to fire damage. The hood exhibited heat patterns at the rear corner on the mail side.

Interior Inspection:

The interior of the vehicle was unremarkable with respect to fire, smoke or heat damage.

Engine Compartment Inspection:

Fire and heat damage was observed at the rear corner of the engine compartment on the mail side. The most severe damage was low along the side of the engine in proximity to the exhaust manifold. A large hole was observed in the side of the engine block on the mail side of the engine. Portions of the internal components were visible through the hole. The engine oil level registered on the dipstick within the "add" range just below the "operating range" markings. The vehicle was equipped with a 2.5L four-cylinder engine. The vehicle was also equipped with a fuel injected throttle body and standard electronic ignition.

Undercarriage Inspection:

Inspection of the undercarriage was unremarkable with respect to fire damage. An accumulation of engine oil residue was visible across the cross member of the vehicle's frame. The oil pan and oil pan plug were in place. A small hole was observed on the mail side of the oil pan toward the rear of the engine. The sharp metal edges around the perimeter of the hole protruded outward and were consistent with damage from the internal portion of the engine. No physical evidence of external damage was observed on the oil pan.

The fuel lines and brake lines were unremarkable with respect to fire or mechanical damage.

Fuse Panel Inspection:

Examination of the fuse panel was unremarkable with respect to physical evidence of fire cause.

Area of Fire Origin:

Based on the observed patterns of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated inside the engine compartment, along the mail side of the engine. The specific ignition sequence and cause of the fire was hot surface ignition of fugitive engine oil contacting the exhaust manifold.

Potential Contributing Factors:

An undetermined internal mechanical failure created a hole in the side of the engine block and a hole in the side of the oil pan.

Evidence Collected:

A sample of the engine oil was collected and shipped to Forensic and Scientific Testing laboratory for atomic emission testing and wet chemical analysis. Examination of atomic emission and wet chemical findings for the oil indicates all component wear rates are normal. The condition of the oil is acceptable for the time in service. The engine oil does not appear to be a contributing factor to the mechanical failure.

Interviews:

A call came in from the carrier of oil leaking, smoking and sparks under the hood. When the tow truck arrived at 10:00 pm to the broke down LLV, the fire department was on scene and a small fire was extinguished. Multiple attempts were made to interview the carrier with no return calls.

Service Records:

A review of the service records for the listed LLV was completed. Work order #25303861 indicates work to install a new engine long block assembly was completed on March 6, 2019. Preventative maintenance including oil change and filter replacement was completed on May 21, 2019.

This report contains a summary of our findings and does not include a full description of the investigative tasks and methodology we took to reach our conclusions. If a full final report of findings is needed, one will be completed at the request of USPS.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Philip M. Noah

Philip M Noah, IAAI-CFI, CVFI
Fire Division Manager

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

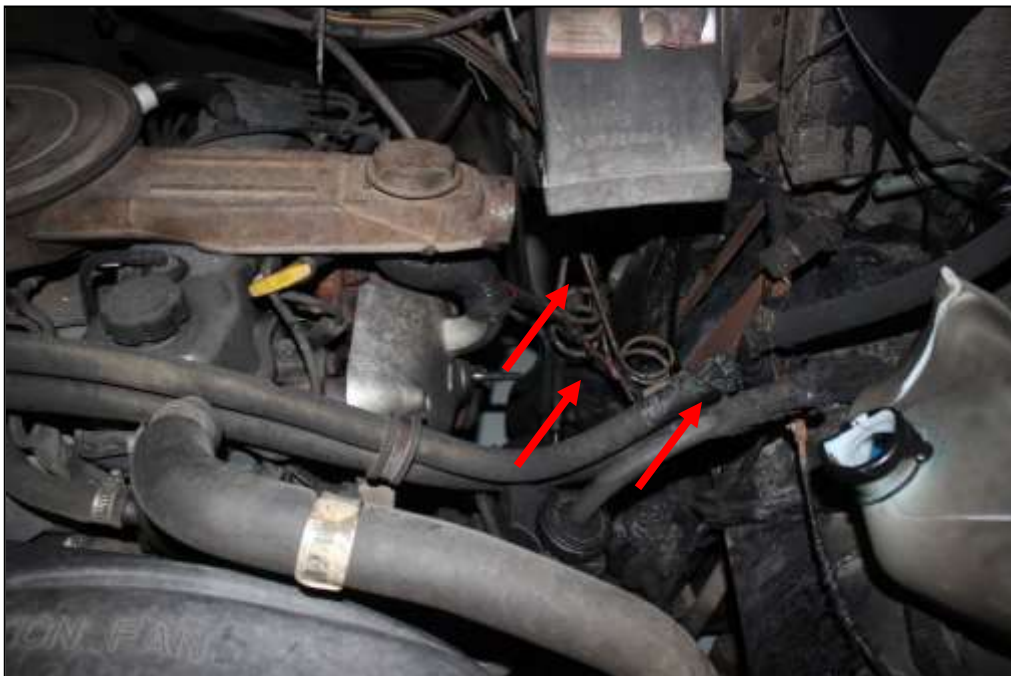
Photograph 1

View of heat damage on the mail side of the hood.



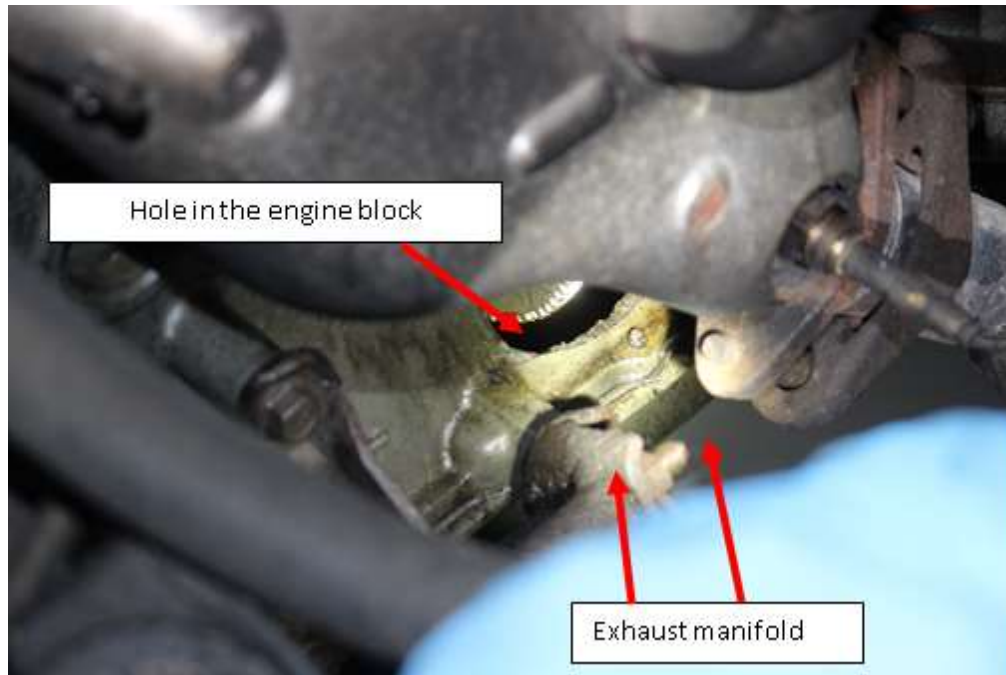
Photograph 2

View of fire damage in the rear corner of the mail side of the engine compartment.



Photograph 3

View of the hole in the engine block with internal components visible through the hole.



Photograph 4

View of the hole in the oil pan with the metal edges protruding outward.



August 15, 2019
Rimkus File No. 100008954

Curriculum Vitae



Philip M. Noah, C.F.I., C.V.F.I

Manager
Fire Division

Background

Mr. Noah is a Certified Fire Investigator, a Certified Vehicle Fire Investigator, and a licensed private fire investigator in Missouri. He is also a licensed private investigator in Arkansas, Oklahoma, Kansas, and Illinois.

He has over 28 years of experience in fire suppression operations, fire/explosion investigations, technical rescue, hazardous material incidents, fire code enforcement, and building construction plans review. Over his career, he has led or assisted in the origin and cause of more than 500 fire and explosion investigations. As a fire investigator, he conducted origin and cause investigations on fatal structure fires, residential fires, commercial fires, and vehicle fires.

As the Springfield Fire Dept. Fire Marshal, Mr. Noah served as a public safety bomb technician on the Springfield Missouri Bomb Squad, and was a founding member of the Greene County, MO Arson Task Force, during which time he worked closely with the FBI and the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). While in this position, he also performed hundreds of building plans reviews evaluating structures for International Fire Code compliance. Mr. Noah has instructed courses in fire scene evidence preservation, explosives awareness, and fire investigation awareness for the insurance industry.

Mr. Noah has testified and been qualified as an expert in court proceedings pertaining to fire origin and causation. Mr. Noah is also a court-certified expert in the field of fire origin and cause determination.

Contact Information

(314) 432-9255

pnoah@rimkus.com

10 Kimler Drive,
Suite G
Maryland Heights, MO 63043



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road SE, Suite 224
Atlanta, Georgia 30339
Telephone: (770) 436-9399
Certificate of Authorization No. PEF002580
Certification Expiration Date June 30, 2020

July 19, 2019

Re: RCG File No: 100006846
LLV Number: 2200189
VMF Location: 1288 Gresham Road Marietta, Georgia
Subject: Preliminary/Final Report

Dear ,

On June 25, 2019, a fire occurred in a US Postal Service vehicle at 850 Windy Hill Road in Smyrna, Georgia. On June 28, 2019, we inspected the 1992 GMC LLV 2200189, VIN 1GBCS10A0N2907756, at the Marietta Auxiliary Vehicle Maintenance Facility located at 1288 Gresham Road in Marietta, Georgia.

In the course of our work, we inspected the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Gregory M. Cloer, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV. The specific area of fire origin was determined to be on the left side of the engine towards the rear and down at the bottom of the engine.
2. The specific area of fire origin was determined to be at the wiper fluid reservoir.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of the wiper fluid reservoir motor overheating and igniting the wiper fluid reservoir.

Observations

Exterior Inspection:

Inspection of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Thermal damage was observed on the hood along the mail side. There were no fire movement patterns or thermal damage observed along the exterior sides of the vehicle.

Interior Inspection:

Inspection of the interior and cargo compartment of the vehicle revealed no fire damage.

Engine Compartment Inspection:

The engine compartment was inspected. The vehicle was equipped with a 2.5L engine. The vehicle was also equipped with a fuel injected throttle body and standard coil ignition. The most severe fire damage was observed in the engine compartment along the mail side of the engine at the wiper fluid reservoir. The battery and its electrical conductors were observed intact. The electrical conductors in the engine compartment were examined. There was no adverse electrical activity noted on the electrical conductors within the engine compartment.

The engine oil and transmission fluid were examined and observed to be within their respective normal operating range. The fuel system was an AC Delco model.

Undercarriage Inspection:

Inspection of the undercarriage revealed no fire patterns extending from underneath the vehicle. The LLV was mounted on a GM frame. The fuel tank and fuel lines along the frame rail did not show any signs of failure. The exhaust system was intact. The transmission revealed a leak along the right side of the transmission.

Fuse Panel Inspection:

Inspection of the fuse panel revealed no fire damage. There were no blown or "Open" fuses. The electrical conductors and their connectors were observed intact with no abnormal electrical event. The fuse panel was eliminated as the origin of the fire.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence the fire originated in the engine compartment. The specific area of origin was at the wiper fluid reservoir.

Potential Contributing Factors:

According to the USPS Technicians, the wiper control switch for LLV 2200189 was found in the "On" position. Hanging rubber bands on the wiper control switch by the carrier has been an on-going problem. During the summer months a rubber band could melt, lodging itself into the switch which could cause the switch not to fully rotate to the "Off" position.

Evidence Collected:

The wiper fluid reservoir, wiper fluid reservoir motor, wiper fluid reservoir wiring harness, and the wiper control switch were collected as evidence and submitted to the Rimkus Consulting Group, Inc. Charlotte Office for possible analysis.

Interviews:

The interview of the carrier was not conducted. On July 11, 2019, we called the carrier's supervisor and requested to have Ms. for an interview. As of July 15, 2019, Ms. has not called for an interview.

Service Records:

A review of the service records provided for the involved LLV did not reveal any recent repairs or work that would have caused or contributed to the cause of the fire. The last preventive maintenance was completed on June 29, 2019.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1

View of the front and driver side exteriors.



Photograph 2

View of the rear and passenger side exteriors.



Photograph 3

View of the engine compartment.



Photograph 4

View of the wiper fluid reservoir.



Photograph 5

View of the wiper fluid reservoir motor.



Photograph 6

View of the wiper fluid reservoir motor.



Curriculum Vitae



Gregory M. Cloer, CFI

Fire Consultant
Fire Division

Background

Mr. Cloer is a Certified Fire Investigator through the International Association of Arson Investigators and National Professional Qualification, a Certified Arson Investigator through Georgia Peace Officer Standards and Training Council (P.O.S.T.) and certified for fire/arson investigation through the National Fire Academy. He was certified by Georgia P.O.S.T. as a basic peace officer and served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting and prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator.

Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. He has testified as an expert in criminal and civil courts related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

Contact Information

(770) 436-9399

gcloer@rimkus.com

2030 Powers Ferry Road SE,
Suite 224
Atlanta, GA 30339



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road Suite 224
Atlanta, Georgia 30339
(770) 436-9399 Telephone
(770) 438-2189 Facsimile

April 24, 2019

Re: RCG File No: 50809271
LLV Number: 2200191
VMF Location: 1605 Boggs Road Duluth, Georgia
Subject: Preliminary/Final Report

Dear Ms.

On March 28, 2019, a fire occurred in a US Postal Service vehicle at 3100 South Cobb Drive in Smyrna, Georgia. On April 1, 2019, we inspected the 1992 LLV 2200191, VIN 1GBCS10A3N2907752, at the North Metro Vehicle Maintenance Facility located at 1605 Boggs Road in Duluth, Georgia.

In the course of our work, inspected the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Gregory M. Cloer, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated within the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the fuel filter.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of an improperly secured fuel line connection at the top of the fuel

filter. The improperly secured fuel line allowed atomized gasoline to escape from the fuel line. The atomized gasoline was ignited by the hot surface of the exhaust system located below the fuel filter.

Observations

Exterior Inspection:

Inspection of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Fire movement patterns were observed extending from the mail side of the engine compartment progressing to the interior compartment and roof of the LLV. Most of the roof above the interior compartment and front sides of the interior compartment had been consumed during the fire event. The cargo compartment walls, roof, and rear door remained intact.

Interior Inspection:

Severe fire damage was observed throughout the interior of the vehicle. All combustible materials within the interior compartment had been consumed by the fire. The bulkhead between the engine compartment and interior compartment had been consumed by the fire. The fuse panel that had been positioned on the right side near the bulkhead had also been partially consumed. The aluminum bulkhead panel between the interior compartment and the cargo area had been partially consumed. The cargo compartment had sustained fire and heat damage throughout.

Engine Compartment Inspection:

The engine compartment was inspected. The vehicle was equipped with a 2.5L engine. The vehicle was also equipped with a fuel injected throttle body and electronic ignition. Severe fire damage was observed throughout the engine compartment. The most severe fire damage was observed in the engine compartment along the mail side of the engine. The battery had sustained severe fire damage.

The electrical conductors in the engine compartment were examined. The electric control module (ECM) positioned near the center of the bulkhead sustained fire and heat damage. No evidence of adverse electrical activity was observed. There was no adverse electrical activity noted on the electrical conductors within the engine compartment.

The alternator displayed heat damage. The insulation on main conductors to the alternator had been consumed. The conductors were secure. The engine oil and transmission fluid were examined and observed to be within their respective normal operating range. The fuel system was an AC Delco model.

Undercarriage Inspection:

Inspection of the undercarriage revealed no fire patterns extending from underneath the vehicle. The LLV was mounted on a GM frame and had sustained some damage to the left frame rail below the engine. This damage was consistent with the fire originating at the fuel filter and fuel lines. The engine fuel lines were located along the left side of the engine. The fuel filter was located on the left side at the rear of the engine. The fuel tank and fuel lines along the frame rail did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Inspection of the fuse panel revealed that it sustained severe fire damage. All of the fuse panel combustible materials had been consumed during the fire. The electrical conductors and their connectors were observed with no adverse electrical event. The fuse panel was eliminated as the origin of the fire.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the engine compartment. The specific area of origin was at the fuel filter.

Potential Contributing Factors:

Improper securing of the fuel line to the top of the fuel filter was identified as a contributing factor of the cause of the fire.

Evidence Collected:

The involved components were collected and sent to Technical Fire Manager David R. Meyers, IAAI-CFI (V) in the Charlotte, North Carolina office for possible future analysis:

Item A – Fuel Filter and Fuel Lines

Interview:

A telephone interview was conducted with Ms. on April 9, 2019. She reported the following:

- On the day of the fire event, Ms. was assigned to LLV 2200191. This was the first time she had driven the LLV.

- Ms. had started her route at 8:30 A.M. Prior to starting her route, she drove to the Sunoco gas station located across the street from the post office at 902 Windy Hill Road. She filled the LLV with gasoline.
- Ms. then drove from the Sunoco gas station to the Chic-Fil-A located at 3100 South Cobb Drive in Smyrna, Georgia. As she departed the Sunoco gas station, she smelled the odor of gasoline.
- The drive to the Chick-Fil-A was approximately 5 minutes. Upon arriving, she parked the LLV and turned it off. Ms. then heard a popping sound and then observed fire coming from the engine compartment.
- Ms. reported that the flames were observed coming from the back of the hood near the center and at the base of the windshield.
- According to Ms. , a witness had reported to her that she observed a fluid leaking from the front of the LLV while Ms. Mack was parking the LLV.

Service Records:

The provided service records did indicate that an engine replacement had been performed on the vehicle in February, 2019. Recent work performed on the vehicle may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,

RIMKUS CONSULTING GROUP, INC.

Greg M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

April 24, 2019
RCG File No. 50809271

Photograph 1

View of the front and passenger side exterior.



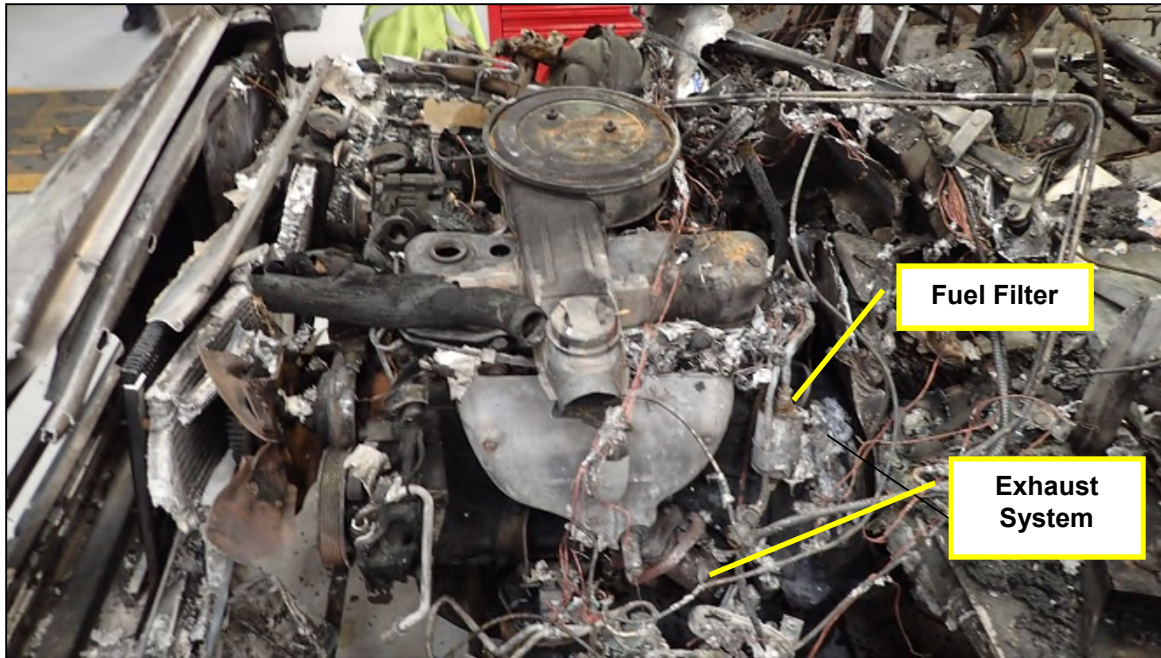
Photograph 2

View of the engine compartment.



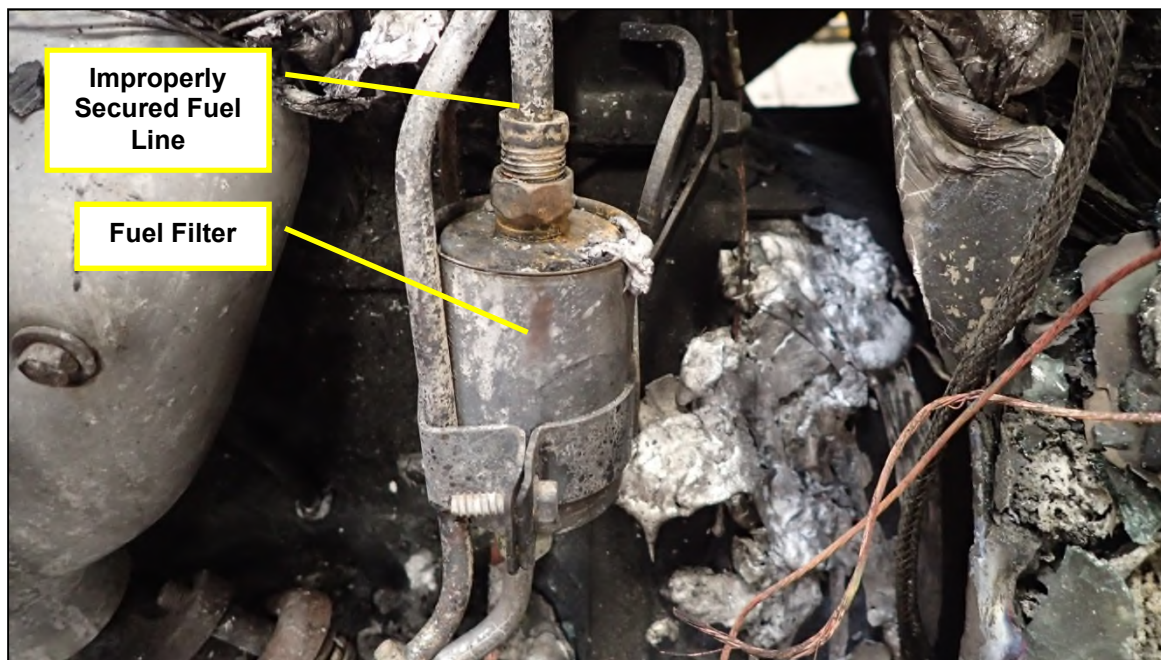
Photograph 3

View of the fire origin within the engine compartment after debris has been removed.



Photograph 4

View of the fuel filter.



April 24, 2019
RCG File No. 50809271

Photograph 5
The undercarriage area.



Photograph 6
Cargo area.



April 24, 2019
RCG File No. 50809271

Curriculum Vitae



**GREGORY M. CLOER, C.F.I.
FIRE CONSULTANT**

Mr. Cloer is a Certified Fire Investigator (C.F.I.) by Georgia P.O.S.T., NPQ, N.F.A. and IAAI for fire/arson investigation, and is certified by Georgia P.O.S.T. as a basic peace officer. Mr. Cloer has also served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting & prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator. Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. Mr. Cloer has testified as an expert in criminal court related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certification, P.O.S.T. Basic and Advanced Arson Investigation (Currently Fire Investigator I and II)
Certification, P.O.S.T. Basic Peace Officer
N.F.A. Fire/Arson Investigation
P.O.S.T. Arson Investigator
IAAI-CFI
NPQ Certified Fire Investigator
NPQ Fire Instructor

TRAINING/CERTIFICATES

Certified Fire Investigator • Fire Instructor • Peace Officer • EMT • Paramedic • Advanced Fire Investigator • Advanced Fire Cause & Origin Expert Witness

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1986 – 2015	Cobb County Fire and Emergency Services

DETAILED PROFESSIONAL EXPERIENCE:

RIMKUS CONSULTING GROUP, INC.

2015 - PRESENT

Fire Consultant

Conduct fire, arson, and explosive investigations including residential, commercial, and vehicular losses for clients. Collect and preserve evidence ensuring a precise chain of custody. Conduct interviews with victims, property owners, witnesses, investigators, and pertinent third party organizations. Photograph scenes and prepare detailed written investigative reports as to the conclusions and opinions of the subject loss. Testify in related depositions and trials.



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
9125 Guilford Road, Suite 108
Columbia, Maryland 21046
(877) 872-2999 Telephone
(410) 872-9111 Facsimile

October 17, 2018

Re: RCG File No: 47510261
LLV Number: 2200403
VMF Location: 16501 Shady Grove Road Gaithersburg, Maryland
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 2200403, VIN 1GBCS10A3N2908058. The vehicle was examined at the USPS Vehicle Maintenance Facility located at 16501 Shady Grove Road in Gaithersburg, Maryland. The fire incident reportedly occurred at 17104 Chiswell Road in Poolesville, Maryland on September 21, 2018.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed the carrier on October 10, 2018. Our work to complete this assignment was performed by Fire Consultant Charles W. Feeley, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment in the area of the bulkhead on the left side of the vehicle.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a leak in the fuel injector throttle body and the atomized gasoline vapor coming in contact with a competent ignition source, in the immediate vicinity of, or within, the air filter canister.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. There was fire, heat and smoke damage to the exterior front of the vehicle. The hood sustained the most severe fire damage and had been removed prior to the inspection. The panel between the hood and the windshield sustained fire, heat, and smoke damage and had been partially consumed. The front windshield sustained fire, heat, and smoke damage and had melted. The front left fender sustained fire and heat damage and had been partially consumed from the center of the wheel well to the bulkhead. The door and side panel sustained fire and heat damage along the upper portion and at the rear vent. The rear sustained fire and heat damage to the door which had been partially consumed. The right fender sustained fire and heat damage and had been partially consumed from the rear of the wheel well to the bulkhead. The door and side panel sustained fire and heat damage along the upper portion and at the rear vent. The roof sustained fire and heat damage. The front portion of the roof had been consumed.

At the time of the inspection, all of the tires were found to be of the same make, size, and manufacturer. The front left tire had been partially consumed. The front right tire sustained heat damage. There was no evidence to indicate that the tire, brakes, brake lines, wheels or axles had failed. All doors were observed in working order at the time of the fire.

Interior Inspection:

The rear cargo area sustained fire, heat and smoke damage throughout. The cargo area bulkhead sustained the most severe at the left, driver's side of the bulkhead.

The driver's compartment sustained fire, heat and smoke damage throughout. The dashboard sustained fire and heat damage and had been consumed. The heater fan and duct sustained fire and heat damage and had been placed in the cargo area prior to the inspection. The steering wheel sustained fire and heat damage and had collapsed to the floor. The ignition had fallen to the floor. The fuse panel had sustained fire damage and had collapsed into the engine compartment.

The ventilation fan and heater fan had become dislodged and had been placed in the cargo area prior to the inspection. The heater coil had become dislodged and was on the floor of the driver's compartment. The windshield wiper motor had sustained fire and heat damage and had become dislodged. They had also been placed in the cargo area prior to the inspection.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. The vehicle was equipped with a GM 2.5L, four-cylinder gasoline engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment sustained fire, heat and smoke damage throughout. The damage was most severe on the left side of the engine compartment. The power steering unit sustained fire damage. The upper portion of the flexible return line had been consumed. The pressure line was dislodged but was intact. The upper radiator hose sustained heat damage to the exposed surface facing the bulkhead. The lower radiator hose was undamaged.

The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been consumed. The melted remains of the fuse box from the passenger compartment and the attached wiring harness were inspected. The wiring harness sustained fire and heat damage. The insulation had been consumed. No evidence of adverse electrical activity was observed. The alternator sustained severe fire and heat damage. The insulation had been consumed from the conductor to the alternator. The conductor was secure with no evidence of adverse electrical activity.

The top of the battery case had sustained fire and heat damage. The conductors had become detached from the terminals. The negative conductor was attached to the frame. The main positive conductor was attached to the starter. The insulation had been consumed but displayed no evidence of adverse electrical activity.

The distributor positioned on the right side of the engine sustained fire and heat damage. The air filter sustained heat damage inside of the metal housing. The damage was more severe on the left side of the air cleaner.

The fuel lines were intact at the carburetor. The fuel line was intact from the carburetor to the fuel filter positioned on the left side of the engine. The flexible section of fuel line from the left front of the vehicle to the fuel filter had been consumed. The fixed fuel lines at the left front of the engine compartment were in place the flexible lines and vapor line from the front of the frame had sustained fire and heat damage. The vapor line to the charcoal canister positioned in the left front corner had been consumed. The charcoal canister was intact.

The left motor mount had been consumed. The bolt used to secure the motor was not secured.

Undercarriage Inspection:

Examination of the rear undercarriage revealed no evidence of soot, smoke, heat or fire damage. The undercarriage in the area of the engine sustained fire and heat damage. The involved LLV was mounted on a GM frame. The fuel lines were positioned within the open frame to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. They were routed above the transmission to the right side of the engine. The rubber sections of the fuel lines at the transmission were intact. The top of the transmission sustained heat damage. The plastic vent line had melted.

Fuse Panel Inspection:

The fuse panel in the passenger compartment which had fallen into the engine compartment was observed with severe fire damage. Examination of the fuse panel revealed severe fire damage and mass loss to the panel and all of the fuses. Due to the severe fire damage and mass loss, we were unable to evaluate the fuses.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated within the engine compartment of the vehicle. The area of origin was determined to be on the left side of the engine compartment. The more specific area of origin was determined to be below the flexible fuel lines. The specific point of origin could not be conclusively identified due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

Potential Contributing Factors:

Chaffing and degradation of the flexible fuel lines located within the area of origin involving excessive vibration to the fuel lines located in close proximity to the engine exhaust header, flange, and exhaust pipe due to failure to properly install bolt which

secured the left motor mount. Replacement of the power steering pump and flexible fuel lines may have repositioned the fuel lines.

Evidence Collected:

No evidence was recovered

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records it was determined that the flexible fuel lines had been replaced in the area of origin approximately two months prior to the fire. The motor mounts had been replaced in October 2016. The power steering unit had been replaced approximately two weeks prior to the fire.

Interview:

Ms. the carrier, was interviewed on October 10, 2018 and provided the following information:

- The vehicle stalled approximately 20 minutes prior to the fire.
- The vehicle started with no problem.
- She did not smell any unusual odors prior to the fire.
- She proceeded on her route.
- While delivering a parcel to a customer, she pulled into the driveway.
- The vehicle stalled.
- She attempted to start the vehicle three times before it started.
- She noticed smoke entering the driver's compartment around the steering column from the engine compartment.
- The smoke was left of the steering column.
- She had to wait for two vehicles to pass before backing out of the driveway.
- She parked on the paved public highway.
- She removed the mail from the vehicle and placed it on the ground behind the vehicle.

- She called 911 and management to report the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles W. Feeley

Charles W. Feeley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curricula Vitae

October 17, 2018
RCG File No. 47510261

Photograph 1

A view of the exterior front of the vehicle.



Photograph 2

A view of the exterior left side of the vehicle.



October 17, 2018
RCG File No. 47510261

Photograph 3

A view of the exterior rear of the vehicle.



Photograph 4

A view of the exterior right side of the vehicle.



October 17, 2018
RCG File No. 47510261

Photograph 5

A view of the interior cargo area of the vehicle.



Photograph 6

A view of the interior driver's compartment of the vehicle.



October 17, 2018
RCG File No. 47510261

Photograph 7

A view of the dashboard of the vehicle.



Photograph 8

A view of the fuse panel.



October 17, 2018
RCG File No. 47510261

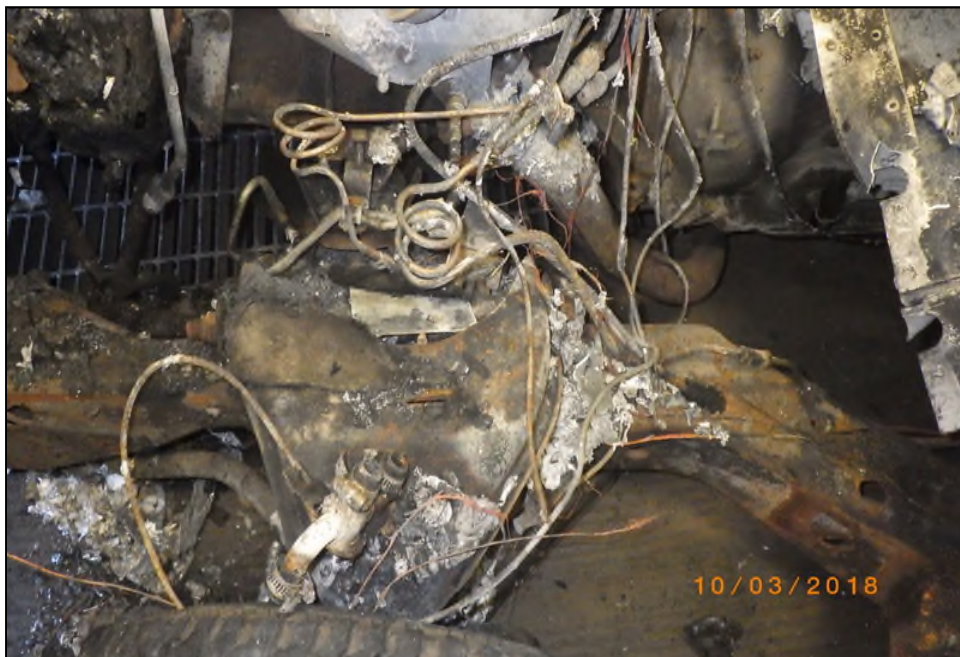
Photograph 9

A view of the battery.



Photograph 10

A view of the left side of the engine compartment.



October 17, 2018
RCG File No. 47510261

Photograph 11

A view of the motor mount bolt.



Photograph 12

A view of the fuel line positioned along the undercarriage left frame.



October 17, 2018
RCG File No. 47510261

Curricula Vitea



**CHARLES FEELEY, I.A.A.I., C.F.E.I., C.F.I., P. I.
FIRE CONSULTANT**

Mr. Feeley had been employed by the Baltimore City Fire Department for 35 years. In this capacity he had been involved in many different emergency positions including Fire Fighter, Lieutenant, Captain, Chief Safety Officer, Battalion Commander and Division Chief.

Mr. Feeley has completed numerous educational seminars and continuing educational courses.

Mr. Feeley investigated over 550 fires in four years as an investigator and in excess of 5,000 fires as an incident commander at fire scenes. He has given expert testimony in civil and criminal court cases. He supervised the Office of the Fire Marshal in Baltimore City. He also supervised special projects such as the Arson Task Force, juvenile fire setters program, an educational intervention program and public education programs.

At Rimkus Consulting Group, Mr. Feeley has conducted over 500 fire origin and cause determinations that include, but are not limited to, assignments involving residential, commercial, industrial, passenger and commercial vehicles, marine, farm implement/equipment, appliance and electrical equipment related fires.

Mr. Feeley has been recognized for his achievements by being the recipient of awards that include Distinguished Unit Citation, Meritorious Conduct Award, Exemplary Performance, and Distinguished Service Award.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

National Fire Academy
National Nuclear Security Administration
United States Department of Justice, New Mexico Tech.
Department of Homeland Security
National Association of Fire Arson Investigators
United States Department of Justice, Anniston AL.
National Association of Fire Investigators.
Certified Fire and Explosion Investigator, N.A.F.I Certification
Certified Fire Investigator, International Association of Arson Investigators
Licensed as a Private Investigator in the State of Delaware

EMPLOYMENT HISTORY

2006 – Present	Rimkus Consulting Group, Inc.
1970 – 2006	Baltimore City Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road SE, Suite 224
Atlanta, Georgia 30339
Telephone: (770) 436-9399

January 17, 2020

Re: RCG File No: 100021394
LLV Number: 2201531
VMF Location: 451 College Street Macon, Georgia
Subject: Preliminary/Final Report

On November 22, 2019 a fire occurred in a US Postal Service vehicle along Highway 41 South in Forsyth, Georgia. On December 11, 2019, we inspected the 1992 Chevrolet LLV 2201531 with VIN 1GBCS10A2N2909203, at the Macon Vehicle Maintenance Facility located at 451 College Street in Macon, Georgia. Reportedly, the LLV was being towed on a roll-back truck when the fire occurred.

In the course of our work, inspected the vehicle, examined maintenance records, and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Gregory M. Cloer, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment in the area of the battery.
2. The specific ignition sequence and cause of the fire was determined to be the direct result of the battery positive post coming in direct contact with the bolt on the battery tray which created an abnormal electrical event involving the high resistive heating of the electrical conductors along the driver's side of the dashboard. The high resistive heating of the electrical conductors ignited the electrical conductor's insulation.

3. The fire spread to nearby combustible materials within the dashboard.

Observations

Exterior Inspection:

Inspection of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side.

Smoke patterns were observed along the driver's side front windshield of the vehicle indicating a fire originating in the passenger compartment. There were no other fire or smoke patterns observed along the exterior of the vehicle.

There was no evidence to indicate that the LLV had recently been involved in a collision.

Interior Inspection:

Inspection of the interior revealed the severe fire damage to the front area of the interior compartment along the driver's side of the dashboard. Smoke damage was observed throughout the remaining areas of the interior.

Engine Compartment Inspection:

The engine compartment was inspected. The vehicle was equipped with a 2.5L engine. The vehicle was also equipped with a fuel injected throttle body and a standard ignition coil.

The fuel system was examined and found to be intact and observed with no fire damage. The battery for the vehicle had been removed prior to our inspection. The battery was located at the front driver's side of the engine compartment. An examination of the battery revealed thermal damage along the battery housing. The plastic battery mount was observed melted around the battery tray bolt. There was no other fire or thermal damage observed within the engine compartment. The vehicle fluids were examined and were found to be within their respective operating range.

The electrical conductors within the engine compartment were examined and were observed to be intact except for two ground conductors. One of the ground conductors was to be connected at the radiator support and was not observed connected to the radiator support. There were no other abnormal electrical events observed along this ground conductor. The remaining ground conductor was observed melted on the end that had been connected to the battery. This ground conductor was observed connected to the driver's side frame rail.

The engine compartment wiring harness was disconnected from the bulkhead connection. This connection led to the fuse block and damage was observed to the interior areas of the wiring harness connector.

Undercarriage Inspection:

The undercarriage was examined. The involved LLV was mounted on a GM frame. The frame rail components were undamaged. The associated fuel lines and filter system were intact and free of damage. The under carriage was eliminated as the origin of the fire.

Fuse Panel Inspection:

The fuse block was observed intact. There were five blown fuses observed in the fuse block. The following are the fuses description and amperage ratings:

1. Cigar Lighter – 15-Ampere (According to the fuse block diagram, the cigar lighter was rated for a 20-Ampere fuse)
2. Hazard Lamps – 15-Ampere
3. Engine Control Module B – 10-Ampere
4. Engine Control Module 1 – 10-Ampere
5. Horn and Cargo/Dome Lamps – 25-Ampere (According to the fuse block diagram, the horn and cargo/dome lamps was rated for a 20-Ampere fuse)

The fuse block electrical conductors and their connectors were observed with no abnormal electrical event. The fuse panel was eliminated as the origin of the fire.

Area of Fire Origin:

Based on our observations, it was determined that the area of fire origin was in the dashboard wiring harness along the driver's side of the vehicle.

Potential Contributing Factors:

The battery was unsecure at the time of the fire event. During transportation, the battery toppled onto its side and the positive post came in contact with the battery tray bolt. This event caused an abnormal electrical event that manifested in the dashboard wiring harness.

Evidence Collected:

The battery, battery tray bolt, plastic battery mount, and portions of the dashboard wiring harness were collected.

Witness Statement:

The tow truck driver stated that the vehicle had been placed on the back of a flat bed truck at the Expressway Body Shop to be towed back to the Macon VMF and he had picked up a second vehicle and was transporting both vehicles when he observed smoke coming from the LLV engine compartment in the area of the battery. A fire extinguisher was used to extinguish the fire. The fire department responded to complete extinguishment.

Service Records:

Recent work was completed by Expressway Body Shop to include replacement of the front body parts in the area of the engine compartment. The work completed by Expressway Body Shop may have been a contributing factor to the cause of the fire due to the lack of the battery being secured prior to transport of the vehicle.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

January 17, 2020
Rinkus File No. 100021394

Photograph 1

View of the front and driver's side exterior.



Photograph 2

View of the fire damage along the driver's side dashboard and windshield.



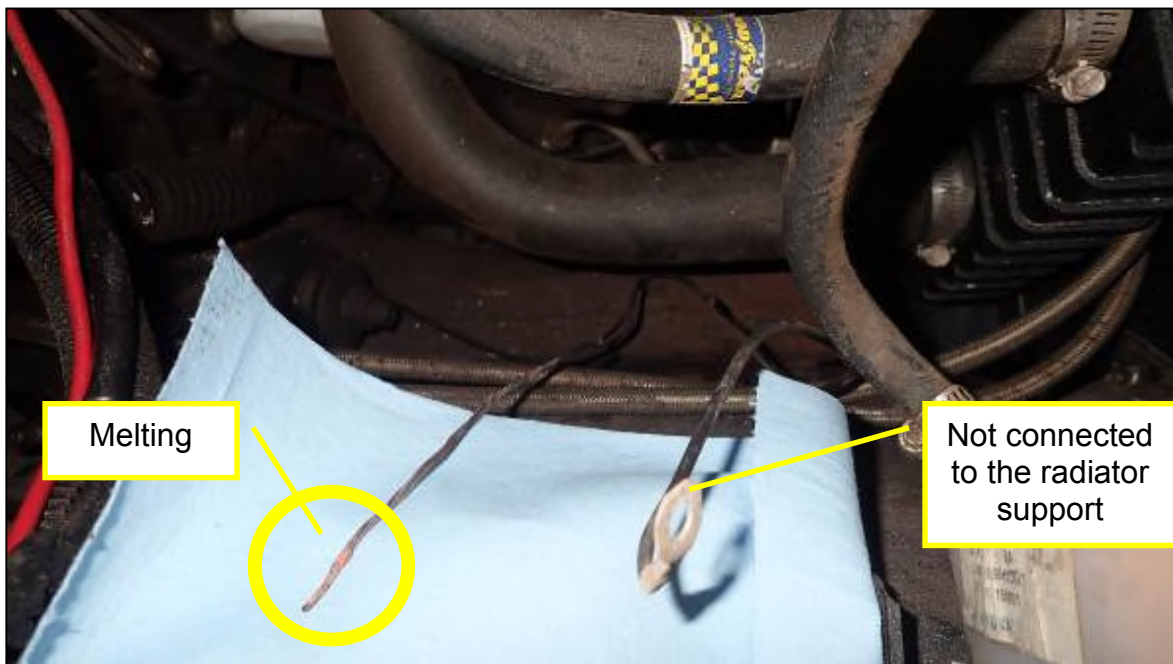
Photograph 3

View of the battery inside the engine compartment after reconstruction.



Photograph 4

View of the engine compartment ground conductors.



January 17, 2020
Rimkus File No. 100021394

Photograph 5
The engine compartment.

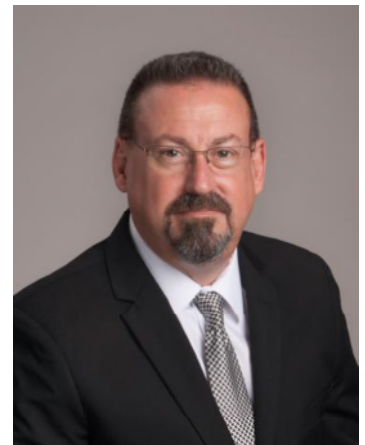


Photograph 6
The battery bolt, observe that the bolt is not tightened down to secure the battery.



January 17, 2020
Rimkus File No. 100021394

Curriculum Vitae



Gregory M. Cloer, CFI

Fire Consultant
Fire Division

Background

Mr. Cloer is a Certified Fire Investigator through the International Association of Arson Investigators and National Professional Qualification, a Certified Arson Investigator through Georgia Peace Officer Standards and Training Council (P.O.S.T.) and certified for fire/arson investigation through the National Fire Academy. He was certified by Georgia P.O.S.T. as a basic peace officer and served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting and prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator.

Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. He has testified as an expert in criminal and civil courts related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

Contact Information

(770) 436-9399

gcloer@rimkus.com

2030 Powers Ferry Road SE,
Suite 224
Atlanta, GA 30339



Rimkus North Carolina, PLLC
5900 Harris Technology Blvd, Suite P
Charlotte, NC 28269
(704) 896-6227 Telephone
(704) 896-6228 Facsimile
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2017

December 14, 2016

Re: RCG File No: 47107430
LLV Number: 2201737
VMF Location: 4603 Dairy Drive Greenville, South Carolina 29607
Subject: Preliminary/Final Report

Rimkus North Carolina, PLLC was retained to examine LLV 2201737, VIN 1GBCS10A3N2909355. The vehicle was examined at the USPS Greenville VMF located at 4603 Dairy Drive in Greenville, South Carolina. The fire incident reportedly occurred on Pete Hollis Boulevard in Greenville, South Carolina on September 19, 2016.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on October 26, 2016. Our work to complete this assignment was performed by Fire Consultant David R. Meyers, IAAI-CFI. This report and case was reviewed by Technical Fire Manager Jack R. Kennedy, III, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the left side of the engine compartment at the exhaust system and engine block.

3. The specific ignition sequence and cause of the fire was a direct result of a catastrophic engine failure that caused a piston rod to be thrown which created a hole in the engine block and allowing ignitable engine fluids to come in contact with the hot surface of the operating exhaust system and ignite.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed in the engine compartment and the passenger compartment. Total mass loss was observed to the windshield, engine hood assembly, dash board and multiple engine components. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage to the passenger compartment and smoke staining to the cargo area. Minor fire damage was observed in the cargo area. The most severe fire damage and mass loss was observed to the dash board area, firewall, steering wheel assembly, and driver's seat.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine. Severe fire damage was observed throughout the engine compartment. The air filter cover and filter were examined and observed with severe fire damage. Electrical wires that transverse the area above the air filter and carburetor were damaged by fire and were thermally damaged, thus eliminating them as a cause. The fuel system was examined and found to be intact, however observed with severe fire damage. The fuel filter was observed with severe fire damage however was observed intact and located along rear of the engine near the fire wall. The fuel system was the GM model.

The battery for the vehicle was located at the front right side of the engine compartment and had severe fire damage to the entire battery. The battery, the battery terminals and battery cables were examined and found to be damaged by thermal damage only, no adverse electrical activity was observed. The battery, battery terminals, and battery

cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range; however water did appear to be in the fluids. The carburetor was examined and observed with fire damage to the top portion of the carburetor where the air filter housing was mounted.

An examination of the engine block was conducted. A large hole was observed on the left side of the engine block directly behind the exhaust manifold. The hole was parallel with the engine crank shaft and appeared to have been blown from the inside out by a piston rod failure. A large quantity of oil was observed on the back side of the exhaust manifold. Based on the fire patterns observed, the left side of the engine within the engine compartment was determined to be the area of origin.

Undercarriage Inspection:

Examination of the undercarriage revealed severe fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. A large quantity of oil was observed on undercarriage including the exhaust and framing. The LLV was mounted on a GM frame was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did reveal a possible leak around the speedometer gear housing unit.

Fuse Panel Inspection:

Examination of the fuse panel revealed severe fire damage to the panel and all of the fuses. Due to the severe fire damage, we were not able to determine if any fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment on the left side of the engine at the exhaust system.

Potential Contributing Factors:

The LLV reportedly was being driven at the time of the fire and the carrier could not get it to shift out of first gear after numerous attempts. The carrier stated the vehicle had no power and could not make it up a hill. The vehicle was pulled to the side of the road when a large oil leak was observed under and behind the vehicle. The carrier observed smoke and opened the engine hood, fire was observed on the left side of the engine in the area of the exhaust manifold.

A large hole was observed on the left side of the engine block directly behind the exhaust manifold. The hole was parallel with the engine crank shaft and appeared to have been blown from the inside out by a piston rod failure. A large quantity of oil was observed on the back side of the exhaust manifold.

The morning of the fire the carrier took the vehicle to Carolina Auto Mobile LLC due to the transmission not shifting. A review of the invoice from Carolina Auto Mobile was conducted. The invoice stated the speedometer gear housing was found leaking and was replaced. Three (3) quarts of transmission fluid was added and the vehicle was tested for function.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

On October 26, 2016, an interview via telephone was conducted with USPS VMF Supervisor at the Greenville office. He reported the following information:

- He was called to the location for an LLV that had a fire in the engine compartment. He had the vehicle towed to the VMF in Greenville, South Carolina.
- He stated the vehicle had a leak in the transmission the day Carolina Auto Mobile, LLC had performed repairs on the vehicle, and the vehicle was used the rest of the day to deliver the mail. The carrier stated the vehicle would not switch out of first gear and was trying to get the vehicle back to the post office when the fire occurred.
- He stated that they have had several mechanical issues with this vehicle in the past and that this was not the first time that this type of transmission incident had occurred with this vehicle.

Service Records:

A review of the service records for the involved LLV indicated that just prior to the fire the vehicle had been service by a third party vendor for transmission issues. Three quarts of transmission fluid was reportedly added and the speedometer gear housing was replaced after it was found leaking. There was no other listed service or repairs that would have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NORTH CAROLINA, PLLC

David R. Meyers

David R. Meyers, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

December 14, 2016
RCG File No. 47107430

Photograph 1

1992 Chevrolet LLV 2201737, VIN: 1GBCS10A3N2909355.



Photograph 2

Severe fire damage to the front engine compartment of the vehicle.



December 14, 2016
RCG File No. 47107430

Photograph 3

Severe fire damage to the left side of the engine compartment.



Photograph 4

The upward and outward progression of the burn patterns from the left side.



December 14, 2016
RCG File No. 47107430

Photograph 5

The right rear of the vehicle.



Photograph 6

The left rear of the vehicle.



December 14, 2016
RCG File No. 47107430

Photograph 7

The cargo area of the vehicle.



Photograph 8

The minor fire damage to the cargo area of the vehicle.



December 14, 2016
RCG File No. 47107430

Photograph 9

The passenger compartment of the vehicle.



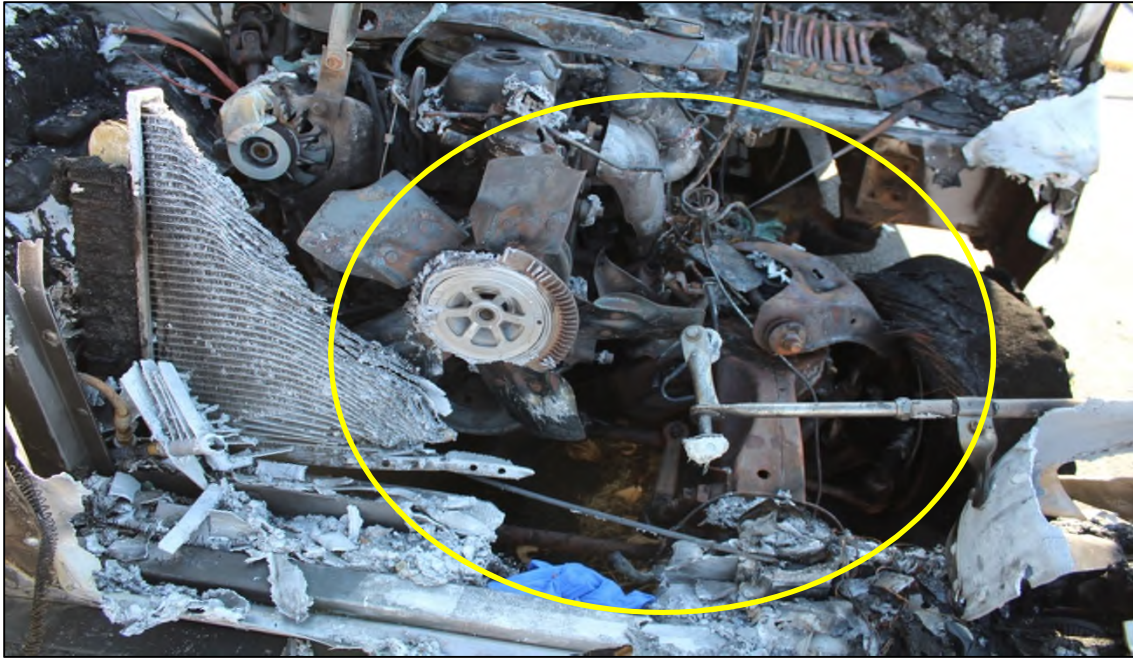
Photograph 10

The vehicle battery, no adverse electrical activity was observed.



Photograph 11

The engine compartment, observe the more severe damage to the left side.



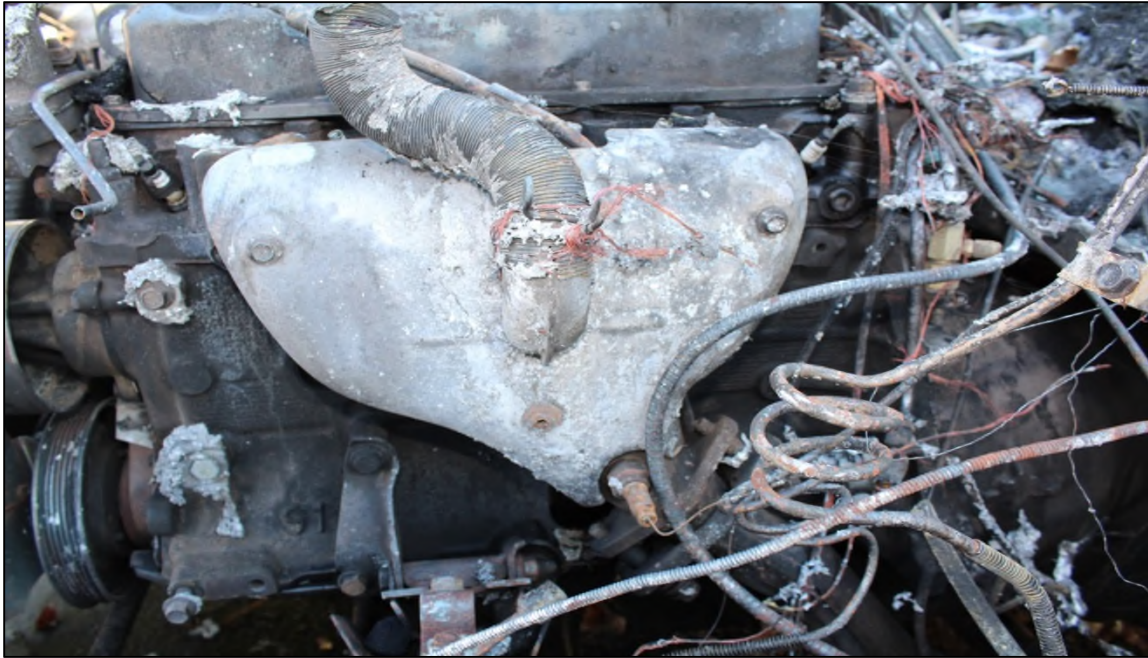
Photograph 12

Observe the upward and outward progression of the burn patterns from the left side of the engine in the area of the exhaust manifold.



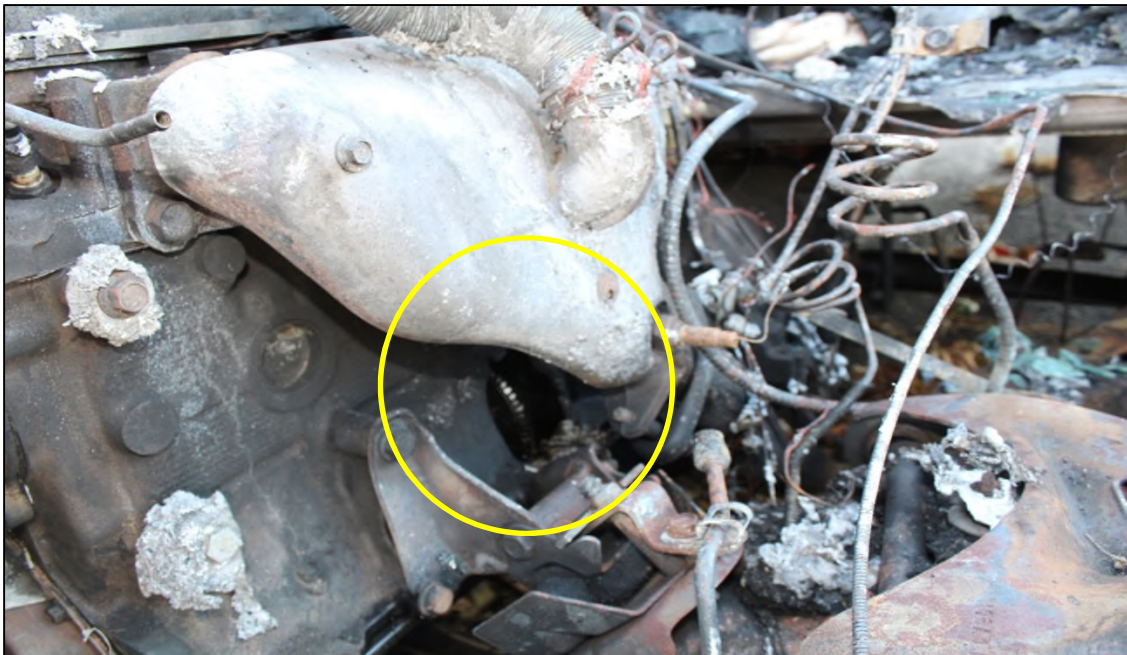
Photograph 13

The exhaust manifold on the left side of the engine.



Photograph 14

The left side of the engine block, observe the hole in the engine block behind the exhaust manifold.



Photograph 15

A closer view of the hole in the engine block.



Photograph 16

The speedometer gear housing that was replaced the day of the fire, observe the fluid on the undercarriage.



December 14, 2016
RCG File No. 47107430

CVs



DAVID R. MEYERS, IAAI-CFI FIRE CONSULTANT

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Kaplan University,
Bachelors in Fire Science, Current Student (2015 Graduation)

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
5900 Harris Technology Boulevard, Suite P
Charlotte, North Carolina 28269
Telephone: (704) 896-6227
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2019

June 24, 2019

Re: RCG File No: 100003034
LLV Number: 2203229
VMF Location: 2901 Scott Futrell Drive Charlotte, North Carolina
Subject: Preliminary/Final Report

Dear,

On May 7, 2019, a fire involving US Postal Service vehicle LLV 2203229 reportedly occurred while the vehicle was in the parking lot of the US Postal Service located at 101 S. Charlotte Avenue in Monroe, North Carolina. The vehicle was manufactured in 1992 and was a Grumman model with VIN 1FCMU69KX10A07178.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Charlotte VMF located at 2901 Scott Futrell Drive in Charlotte, North Carolina. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on May 17, 2019. The vehicle examination was conducted by Fire Consultant Van D. Tuley, IAAI-CFI (V). A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations" and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the left side of the engine towards the rear and down at the bottom of the engine.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of ignition of either leaking or atomized gasoline fuel coming in contact with the hot surface area of the components in the area of the exhaust manifold.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The only visible fire damage observed on the exterior of the vehicle consisted of discoloration around the left front wheel-well and fire damage to the left front tire.

Interior Inspection:

No visible fire damage was observed to the interior of the vehicle. The odometer on the vehicle displayed approximately 166,593 miles.

Engine Compartment Inspection:

The vehicle was equipped with a single-port fuel-injected 2.5L four-cylinder engine with a standard ignition coil. Fire damage was observed on the left side of the engine compartment. A section of insulation had burned away from the electrical wiring for the fuel pump. Fire damage was also observed to the plastic housing for the fan for the vehicles heater. Fire damage was also observed to wiring insulation and rubber hoses in the area of the vehicles fuel line. All of the fire damage in the engine compartment was localized to an area around and above the fuel filter.

Undercarriage Inspection:

Examination of the undercarriage revealed fire damage in the left front wheel-well where a portion of the aluminum had melted. The vehicle was mounted on a GM frame. The exhaust system, fuel tank and the remaining undercarriage components were free of fire damage.

Fuse Panel Inspection:

The fuse panel was positioned on the driver's side (right side) of the bulkhead. All of the fuses were intact and in good condition.

Area of Fire Origin:

The fire originated on the left side of the engine compartment in the area of the fuel line. All of the fire damage observed in the engine compartment was localized around the fuel filter and fuel line.

Potential Contributing Factors:

The fire damage that was observed in the engine compartment was the likely result of a fuel leak around the fuel filter assembly and fuel line. Atomized fuel leaking onto the nearby exhaust manifold resulted in the ignition of the gasoline vapors from the leaking fuel.

Evidence Collected:

No evidence was collected.

Interviews

The driver of the LLV indicated that they were smelling smoke when returning to the Postal Service Office. They stated that they parked the vehicle in the parking lot, and as they were walking toward the building, someone noticed small flames coming from the vehicle left front wheel-well. The carrier then ran inside the building, obtained a fire extinguisher, and extinguished the fire.

Service Records:

Records provided by the Charlotte VMF Manger reflected that the last preventative maintenance performed on the LLV was completed on September 27, 2018.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Van D. Tuley

Van D. Tuley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1

Front view of the vehicle.



Photograph 2

Right side and rear of the vehicle.



Photograph 3

Left side of the vehicle.



Photograph 4

Fire damage to the left front wheel-well and tire.



Photograph 5

Engine compartment of the vehicle.



Photograph 6

Localized damage in the wheel-well and engine compartment.



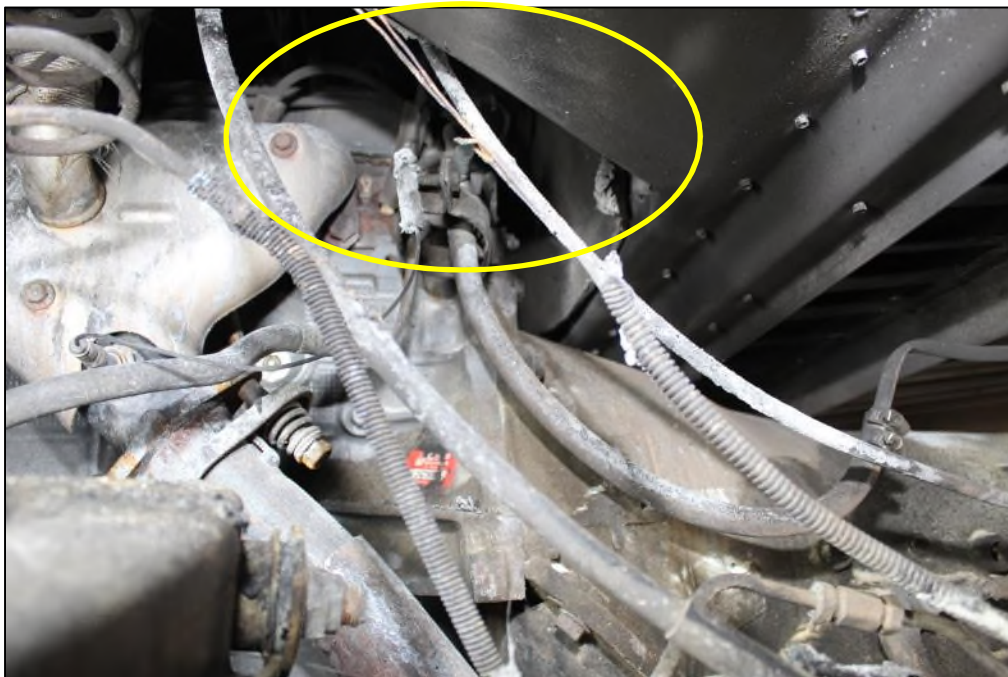
Photograph 7

Fire damage in the wheel-well and lower, left-side of the engine compartment.

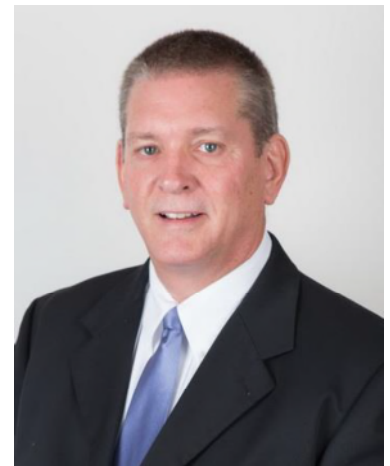


Photograph 8

The fire damage was localized in the area of the fuel filter and fuel line.



Curriculum Vitae



Van D. Tuley, IAAI-CFI

Fire Consultant

Fire Division/Charlotte District

Background

Mr. Tuley attended the University of Evansville, where he earned his M.S. degree in Criminal Justice and his B.S. degree in Law Enforcement. Mr. Tuley has over 30 years of combined investigative experience as a police officer and detective for the Police Department in Portage, IN, and as a special agent with the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). He is a Certified Fire Investigator (CFI) through the International Association of Arson Investigators (IAAI) and a licensed private investigator in multiple states. In addition, he has testified as an expert witness in both federal and state court proceedings as well as depositions involving the investigation of fires.

Contact Information

(704) 896-6227

vdtuley@rimkus.com

5900 Harris Technology
Blvd., Suite P
Charlotte, NC
28269

As a forensic consultant, Mr. Tuley specializes in the determination of the origin and cause of fires and explosions involving residential and commercial structures, as well as cases involving motor vehicles and other conveyances. He also is responsible for coordinating logistics during multi-party examinations for large-loss investigations.

Prior to joining Rimkus, he worked with the ATF for over 24 years. During the last 15 years of his tenure he responded to approximately 500 fire scenes as an ATF-CFI, including residential and commercial structures. He was also a member of the ATF's National Response Team for approximately 16 years, responding to major fire and explosion losses throughout the U.S. as a Certified Explosives Specialist.

Throughout his career, Mr. Tuley has coordinated and instructed continuing education training seminars in fire investigation for state and local fire investigators and law enforcement personnel tasked with the investigation of fire and explosion incidents. To stay up-to-date on the latest developments in his fields of expertise, he is an active member of IAAI (the national organization as well as the North Carolina and South Carolina chapters).



Rimkus Consulting Group, Inc.
15311 NE 90th Street
Redmond, WA 98052
(877) 677-6157 Telephone
(425) 629-1799 Facsimile

January 25, 2016

Re: RCG File No: 76101507
LLV Number: 2203238
VMF Location: 2460 4th Avenue South in Seattle, Washington
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 2203238 that occurred at 3043 Island Crest Way in Mercer Island, Washington on November 3, 2015. In the course of the work, we examined and documented the fire-damaged vehicle, and interviewed USPS carrier on November 25, 2015.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility. The work to complete this assignment was performed by Fire Consultant Joseph Jadowski, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the involved LLV.
2. The specific area of origin was determined to be in and around the electrical components associated with the starter.
3. The failure occurred internal to the starter motor and was not observable on the scene.

4. Fire damage was limited and the LLV could be quickly returned to service.

Observations

Exterior Inspection:

The exterior examination of the vehicle revealed no observable physical evidence of soot, smoke, heat or fire damage.

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments revealed no observable physical evidence of soot, smoke, heat or fire damage.

Engine Compartment Inspection:

The examination of the engine compartment revealed no observable physical evidence of soot, smoke, heat or fire damage. The 1992 GMC LLV 2203238 was powered by an inline mounted throttle body gasoline-fuel injected, four cylinder engine with rear wheel drive and an automatic transmission. We inspected the radiator, radiator shroud, air intake system, Carter fuel filter system, fuel lines, belts, hoses, battery, battery cables insulation, battery box, electrical wiring, engine compartment wiring harness, master cylinder, and all plastic components within the upper engine compartment which sustained no noticeable fire-related damage. The engine compartment showed no evidence of oil leakage although the engine dipstick indicated the oil level was low. The engine block, heads, exhaust manifold, alternator, brake booster, transmission, inner fenders and remaining noncombustible components also sustained no noticeable fire related damage. The vehicle was equipped with a GM fuel filter system.

Undercarriage Inspection:

Examination of the undercarriage revealed no observable physical evidence of soot, smoke, heat or fire damage. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

Examination of the fuse panel located within the driver's side operator's compartment revealed no observable physical evidence of soot, smoke, heat or fire damage. The fuse panel did not have a fuse panel cover. We observed no evidence of blown fuses or any adverse electrical activity within the operator's compartment.

Area of Fire Origin:

The area of fire origin was determined to be on the driver's side lower engine compartment involving the internal electrical components of the vehicle starter motor. The fire-related damage was confined to the internal portion of the starter and there was no external observable physical evidence of soot, smoke, heat or fire damage to that area of the engine compartment.

Contributing Factors:

Prior to our inspection of the vehicle and prior to the RCG assignment being received, the vehicle's starter sustained an unknown mechanical failure resulting in an overheating condition of the starter motor.

Photographs provided by USPS staff show no external observable physical evidence of soot, smoke, heat or fire damage to the vehicle.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interviews:

On Wednesday, November 25, 2015, an on-site interview was conducted regarding the circumstances of the fire that occurred at the USPS vehicle on November 3, 2015 at 10:00 a.m. The USPS carrier and operator of the vehicle reported the following:

- Recalled coming to work on November 3, 2105, loading the vehicle with mail to be delivered. He stated he left to post office parking lot and drove a short distance to his first stop at approximately 10:30 a.m. At that time there were no indications of any type of mechanical issues with the vehicle. He stated he drove to his second stop at 3043 Island Crest Way, parked the vehicle, and turned "OFF" the engine.
- He stated, upon returning to the vehicle, he observed the operator's compartment was filled with smoke. At that point he called the fire department and his supervisor to report the incident. He stated the fire department arrived very quickly and extinguished the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to

us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Joseph M. Jadlofski

Joseph M. Jadlofski, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

January 25, 2016
RCG File No. 76101507

Photograph 1

View of the exterior of the USPS LLV 2203238.



Photograph 2

View of the exterior of the USPS LLV 2203238.



January 25, 2016
RCG File No. 76101507

Photograph 3

View of the operator's compartment of the USPS LLV 2203238.



Photograph 4

View of the engine compartment of the USPS LLV 2203238.



January 25, 2016
RCG File No. 76101507

Photograph 5

View of the rear under carriage and frame system of the USPS LLV 2203238.



Photograph 6

View of the front under carriage, and frame system of the USPS LLV 2203238.



January 25, 2016
RCG File No. 76101507

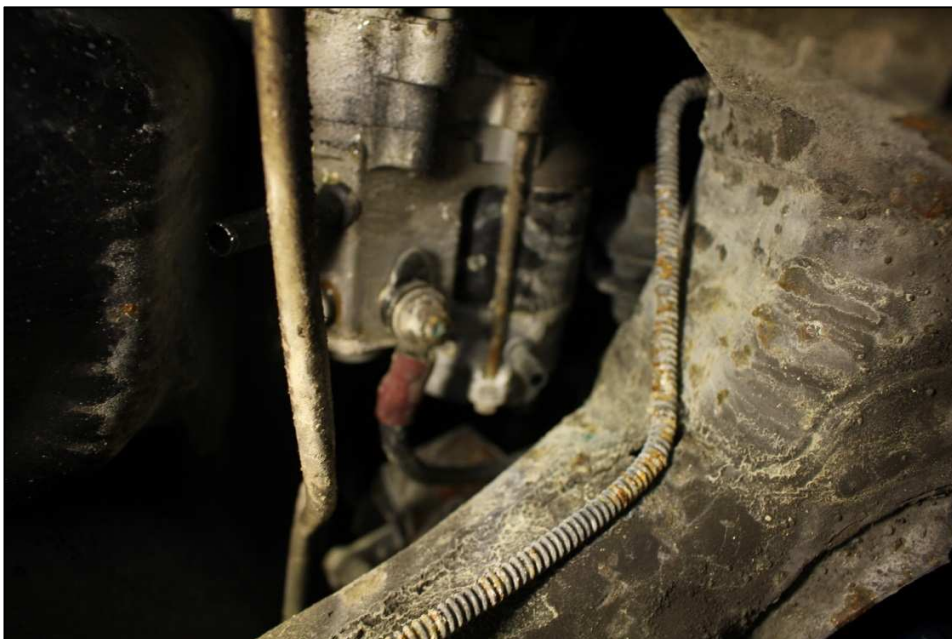
Photograph 7

View of the fuel lines and fuel filter system of the USPS LLV 2203238.



Photograph 8

View of the starter (area of origin) of the USPS LLV 2203238.



January 25, 2016
RCG File No. 76101507

CVs



**JOSEPH M. "MICK" JADLOWSKI — IAAI-CFI, NAFI-CFEI, NAFI- CVFI, PRO BOARD
CERTIFIED
FIRE CONSULTANT**

Mr. Jadowski has an extensive background in fire and explosion origin and cause investigation which includes over 7 years of private sector forensic consulting and greater than 23 years on the City of Omaha Fire Department with 10 years specializing in investigations. He has investigated over 1,000 fires and made over 50 felony arrests for arson and other related crimes during tenure with the Omaha Fire Department. He has conducted fire and explosion investigations that include commercial, residential, and automotive. Additionally, he has vast experience in failure analysis and products liability claims of household appliances.

He has completed numerous educational seminars and continuing education courses. In addition to his educational achievements, he has experience in origin and cause investigations, researching fire code violations, and assisting with failure analysis of appliances.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Vehicle Fire Investigator, CVFI (#13297-6862v): National Association of Fire Investigators

Certified Fire Investigator, CFI (#13-004): International Association of Arson Investigators

Certified Fire and Explosion Investigator, CFEI (#132976862): National Association of Fire Investigators

Pro Board Certified Fire Investigator (#251967): National Board on Fire Service Professional Qualifications

International Association of Arson Investigators – Member

National Association of Fire Investigators – Member

Private Investigator License in Nevada (NV PILB License #1262), Arizona (1596879), Utah (R102415), Montana (PSP-PI-10153), Washington (3664) California (PI 24783)

EMPLOYMENT HISTORY

2009 - Present

2008 - 2009

1985 - 2007

Rimkus Consulting Group, Inc.

Unified Investigations and Science

City of Omaha Fire Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
2550 Corporate Exchange Drive, Suite 24
Columbus, OH 43231
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

March 22, 2016

Re: RCG File No: 53601824
LLV Number: 2204052
VMF Location: 4515 Franklin Avenue in Norwood, Ohio
Subject: Final Report

On January 14, 2016, a vehicle fire occurred at 4651 East Lake Forest Drive in Blue Ash, Ohio. On February 2, 2016, Rimkus Consulting Group, Inc. was assigned to examine LLV 2204052, VIN 1GBSC10A8N2911585.

On February 8, 2016, we conducted an examination of the vehicle at the USPS Vehicle Maintenance Facility located at 4515 Franklin Avenue in Norwood, Ohio. In the course of our work, we examined and documented the fire damaged vehicle, interviewed personnel, and reviewed the local fire department report. Our work to complete this assignment was performed by William Timothy Spradlin, IAAI-CFI, Fire Consultant. This report and case was technically reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association 921 Guide for Fire & Explosion Investigations.

Conclusions

1. An analysis of the observable fire patterns and remaining physical evidence indicated that the fire originated in the interior passenger/operator compartment of the involved LLV.
2. The specific area of fire origin was determined to be in and the around the area of the dashboard where the heater blower motor was mounted.

3. Collected evidence items from the loss were examined in the lab. It could not be conclusively determined which item was the cause and which damage was a result of the fire.
4. The specific ignition sequence and cause of the fire could not be conclusively determined due to the multiple potential ignition sources in the area of origin and the severe fire damage sustained.

Observations

Exterior Inspection:

We observed severe fire damage at the front of the vehicle. We observed the aluminum engine compartment hood partially consumed by heat and fire and collapsed on the left side. We observed the front windshield was broken and collapsed from heat exposure. We observed fire damage patterns on the roof indicating fire had exited the front windshield area and rolled over the front of the roof (**Photograph 1**).

We examined the right side of the vehicle where we observed severe smoke damage above the driver's door and on the side windows.

We examined the rear of the vehicle where we observed moderate smoke staining above the rolling overhead door and smoke staining on the rolling overhead door. Based on our observations, it was our opinion that the door had been open at the time of the fire.

We examined the left side of the vehicle where we observed light smoke staining on the side, the sliding door, and severe smoke stain to the roof above the sliding door. We observed the left side body; aluminum "A" post was partially consumed by fire. We observe extreme heat damage to the left side of the body forward of the door. We observed a hole melted in the aluminum body at this point. We observed the left side rear view mirrors sustained severe fire damaged with the glass broken.

Interior Inspection:

We observed the interior from the driver's door (**Photograph 2**). We observed severe smoke staining and fire damage throughout the front cab interior space. We observed the driver's seat cloth and foam were consumed by fire. We observed the aluminum dashboard was consumed by fire and collapsed on the left side. We observed the aluminum partition wall between the cab and the engine compartment was consumed by fire and collapsed on the left side.

We observed collapsed fire debris and components on the floor of the left side interior. We observed the fire damaged service fan in the debris; the service fan had been mounted on the top of the dash at the left windshield. We observed the fire damaged remains of the heater blower motor. We observed all plastics in the cab area had been consumed by fire. We observed all wiring circuits in the area were severely damaged by fire. We excavated the interior fire debris on the interior floor. We observed the remains of a portable radio and speaker in the fire debris. We observed a fire damaged piece of paper towel stuck to the fire damaged remains of the service fan.

Based on our examination of the fire debris, it was our opinion the portable radio and the service fan could be eliminated as the cause of the fire. We could not eliminate the heater blower motor or the electrical circuits to the heater blower motor.

Engine Compartment Inspection:

We observed the engine compartment had severe heat damage on the left side and on top of the engine block. We observed the partition wall had melted exposing the engine to heat from a fire in the interior. We observed severe damage to all rubber and vinyl engine components on the left side (**Photograph 3**). We observed that the oil and transmission fluids were at the appropriate levels.

We observed fire damage to the lower left side of the engine. We observed fall down fire damaged debris and molten aluminum from the body and hood of the vehicle. It was our opinion the engine compartment could be eliminated as the area of origin of the fire. The involved LLV was equipped with a GM fuel filter system. The fuel system was eliminated as being involved in the cause of the fire.

Undercarriage Inspection:

We observed the undercarriage was undamaged with exception of the lower engine compartment space. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

We observed the fuse panel; it was smoke stained but undamaged and intact. We observed a 25 amp fuse for the heater was blown. We observed a 20 amp fuse in the circuit labeled for the service fan. The specification for the fuse in the service fan circuit was for a 10 amp fuse. We observed the 20 amp fuse in the service fan circuit was intact.

Area of Fire Origin:

Based on analysis of the fire damage patterns and excavation of the fire debris it was our opinion that the area of fire origin was the left front of the cab at or near the heater

blower motor (**Photograph 4**). We could not eliminate electrical components in that area. We observed fire damage indicating that the fire spread upward consuming the plastic heater vent duct work and vinyl wiring installation. We observed fire damage indicating the fire consumed the aluminum of the dash and spread into the engine compartment. We observed damage indicating radiant heat ignited the combustible coverings of the driver seat and it was consumed by fire.

Contributing Factors:

The fire area of origin was determined; however, the specific ignition source within that area or the contributing factors to the cause of the fire could not be conclusively determined.

Interviews:

We conducted a telephone interview with the Sycamore postal branch postmaster. She stated that the carrier who drove the vehicle on the day of the fire was unavailable for an interview due to vacation. She stated that on the day of the fire, the carrier was driving when smoke began to come from the area of the heater blower. She stated the carrier told her the heater fan motor had been rattling and squealing on the day of the fire. She stated the carrier stopped and removed all the mail from the vehicle, leaving the driver door and rear overhead door open. She stated the carrier told her the fire spread rapidly prior to arrival of the local fire department. She stated the vehicle had a history of electrical problems including lights, dimmer switches, and other components failing to work properly.

We conducted an interview with vehicle maintenance manager. He provided a photo and video of the fire scene taken by the carrier on the day of the fire. He also provided the maintenance records for the vehicle. He stated the vehicle had numerous electrical problems including replacement of three dimmer switches in recent maintenance history. He stated the paper towel residue was most likely from the heater motor area. He provided a photograph from another LLV showing where paper towels were stuffed into gaps in the duct work to keep out cold air during winter weather. The presence of the paper towels would have contributed to the first fuels ignited in the area of origin when the fire started.

Evidence Collected:

We collected the service fan, the heater blower motor, the wiring circuit to the heater blower motor, and two fuses from the fuse panel as evidence. Evidence items were examined in the lab and a conclusive determination as to the failure or cause of the fire could not be determined.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Spradlin

William T. Spradlin, BS, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 22, 2016
RCG File No. 53601824

Photograph 1

Left front with fire damage to hood, roof, mirrors, and A post of body.



March 22, 2016
RCG File No. 53601824

Photograph 2

Driver / right side of vehicle with heavy fire damage to interior.



March 22, 2016
RCG File No. 53601824

Photograph 3

Engine compartment with radiant heat damage extending from the left rear.



Photograph 4

Area of fire origin at the left front dash heater blower motor location.



March 22, 2016
RCG File No. 53601824

CVs



**WILLIAM TIMOTHY SPRADLIN, IAAI-CFI, CI, FIT, NAFI-CFEI
Fire Consultant**

Mr. Tim Spradlin has over 35 years' experience in firefighting, law enforcement, fire, arson and bombing investigation. His fire / explosion investigation work spans over 20 years of service, and he has three related college degrees. His career includes work as a full-time fire lieutenant, captain, deputy chief and fire chief in Xenia Township, Ohio. Mr. Spradlin also served as a reserve deputy sheriff with the Greene County Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He retired from 32 years public safety work as the Chief of the State of Ohio Fire Marshal's Fire – Explosion Investigation Bureau. From January 2008 until September 2014 Mr. Spradlin was the full-time chief fire / arson investigator for Ohio. He was also the curriculum manager / instructor for the Ohio Fire Academy fire investigation programs.

Mr. Spradlin also served in the United States Air Force, where he served 4 years active duty and 26 years reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant / First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the US Army in 2007 for combat meritorious service.

He currently serves as a police officer in the Village of Yellow Springs and as a volunteer fire training officer with the Xenia Township Fire Department in Ohio. Mr. Spradlin also teaches in the Clark State Community College fire programs and the Sinclair Community College Basic Police Officer Training Academy.

Mr. Spradlin is a certified fire investigator (CFI), fire investigation technician (FIT) and certified instructor (CI) by the International Association of Arson Investigators (IAAI). He is also a certified fire explosion investigator (CFEI) by the National Association of Fire Investigators (NAFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Bachelor of Science Degree in *Organizational Management* from Wilberforce University, Xenia, Ohio
Associates Degree in *Human Resource Management*, Air University CCAF, Gunter AFS, Alabama
Associates Degree in *Fire Science Technology*, Air University CCAF, Gunter AFS, Alabama
National Fire Academy *Arson Interview, Interrogation and Courtroom Testimony* course
National Fire Academy *Executive Analysis of Fire Operations in Emergency Management*
National Fire Academy *Executive Development* Program
National Fire Academy *Executive Planning* Program
Ohio Fire Academy *Basic Fire Investigation* and *Advanced Fire Investigation* programs
USAFR *Senior NCO Leadership Development Course*, Robins AFB, Georgia
Sinclair Community College Criminal Justice Academy, Dayton, Ohio

Member of the International Association of Arson Investigators (IAAI) and of the Ohio Chapter IAAI
Member of the National Association of Fire Investigators (NAFI)
Member of the National Society of Professional Insurance Investigators (NSPII)



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
13900 Alton Parkway, Suite 123
Irvine, California 92618
Telephone: (714) 954-1912

March 5, 2020

Re: RCG File No: 100026498
LLV Number: 2205176
VMF Location: 7001 S. Central Ave. Los Angeles, California
Subject: Preliminary/Final Report

Dear

On January 30, 2020, a fire occurred involving USPS LLV 2205176. The loss location was reported to be 9434 Cherokee Lane in Beverly Hills, California. LLV 2205176 was examined at the VMF located at 7001 S. Central Avenue in Los Angeles, California.

Rimkus Consulting Group, Inc. was retained to examine the 1992 LLV 2205176 with VIN: 1GBCS10A7N2912758 to determine the cause of the fire. This report and case were reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI (V), on February 12, 2020. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with the carrier and documented the vehicle with photographs.

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be most probably at, or near, the engine exhaust system.
3. The specific ignition sequence and cause of the fire was inconclusive due to the severity of fire damage to the LLV. However, based on the Carrier's observations and circumstances we cannot eliminate a hot-surface ignition of a combustible engine compartment fluid.

Observations

Exterior Inspection:

The LLV sustained severe fire and heat effects to approximately 90 percent of the exterior. Only the front and rear bumper areas, low-level right and left sides of the vehicle, and rear tires remained relatively intact.

Interior Inspection:

The entire interior of the LLV, including the driver and cargo area, sustained severe fire damage and mass loss to all combustible materials.

Engine Compartment Inspection:

The entire engine compartment sustained severe fire damage which inhibited the ability to identify the specific source of the fire. This required reliance on witness's observations to hypothesize the ignition scenario. The vehicle was equipped with 2.5L four-cylinder gasoline engine with the high output ignition coil.

Undercarriage Inspection:

The undercarriage was intact from the rear bumper area, forward to the driver compartment. Fall-down fire effects were observed from the transmission area, forward to the radiator and grill. The vehicle was mounted on a GM frame.

Fuse Panel Inspection:

All fuses were consumed by the fire.

Area of Fire Origin:

The fire originated in the engine compartment, as confirmed by the carrier, Rolando Sotelo. The specific area of fire origin was determined to be most probably at, or near, the engine exhaust system.

Potential Contributing Factors:

Recent service work may have overlooked a loose hose or fitting connection which manifested into a leak of combustible engine compartment fluid. The LLV had reportedly just come out of the VMF, where service work was performed, and the LLV had been operating on the delivery route, for less than two hours, when the fire occurred.

Evidence Collected:

No evidence was collected.

Interviews:

The carrier of the United States Postal Service, provided the following information:

- Mr. has been a carrier for USPS for five years.
- He has driven the subject LLV prior to the fire.
- The day of the fire the LLV had just come out of the shop, where it was serviced, and this was the third time it was recently in the shop for various issues. He believes there may have been transmission issues in the past because the LLV would not respond to throttle input, it would just keep going slow.
- The morning of the fire, the LLV had just come out of the garage that day. It ran okay at first, but after an hour or two, it developed problems.
- He was on Cherokee Avenue and went down the hill. Then when he was coming up the hill, there was not much power, and it seemed like the engine was working hard. When he came to the stop, the engine stalled.
- He noticed an odd smell, like rotten eggs, while he was driving up the hill, but didn't think it was gasoline.
- He then noticed smoke at the hood and thought it was steam. But, then it soon turned to grey then black smoke. He knew it was a fire then. He got out and

looked under the LLV and saw fire dripping onto the street directly below the engine. Then flames also appeared at the engine hood vents.

- He grabbed a fire extinguisher from the security office at this stop and the security officer called the fire department. He was unable to stop the fire with the extinguisher.
- A few minutes later, as the fire grew, he heard a pop and the LLV rolled away, going up onto the curb. He thought that was odd since he had set the parking brake.

Service Records:

Records were collected and reviewed. The last service prior to the fire was concluded on January 27, 2020, work order 28154372, and involved replacing the PCV and EGF valves and air cleaner; among other items. The work order also noted stalling, rough running, and strong odor.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI(V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

March 5, 2020
Rimkus File No. 100026498

Photograph 1
Subject LLV.



Photograph 2
Subject LLV, left side.



March 5, 2020
Rimkus File No. 100026498

Photograph 3
Interior and cargo areas.



Photograph 4
Engine, Air filter removed for inspection.



March 5, 2020
Rimkus File No. 100026498

Photograph 5
Engine, right side.



Photograph 6
Engine, left side.



March 5, 2020
Rimkus File No. 100026498

Curriculum Vitae



David A. Lowe, CFI

Fire Consultant
Fire Division

Background

Mr. Lowe is a Certified Fire Investigator with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services. He is also FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 28 years of experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land.

Investigations and consultations, conservatively estimated at over 2,250, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otay, Mexico and Taber, Alberta, Canada.

Contact Information

(657)-229-9952

dlowe@rimkus.com

13900 Alton Parkway,
Suite 123
Irvine, CA 92618



Rimkus Consulting Group, Inc.
13900 Alton Parkway Suite 123
Irvine, California 92618
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

January 10, 2019

Re: RCG File No: 71807507
USPS LLV Number: 2206747
VMF Location: 580 W. Monterey Avenue Pomona, California
Subject: Preliminary/Final Report

Dear Ms.

On December 7, 2018, a fire occurred involving a US Postal Service LLV 2206747. The loss location was reported to be 15254 Yorba Avenue in Chino, California. LLV 2206747 was examined at the VMF located at 580 W. Monterey Avenue in Pomona, California.

Rimkus Consulting Group, Inc. was retained to examine LLV 2206747, VIN 1GBCS10A5N2914329 to determine the cause of the fire. In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on December 18, 2018. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver Ms. Yvonne Elizarraras, and documented the vehicle with photographs. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the interior compartment of involved LLV 2206747.

2. The specific area of fire origin was determined to be in the dashboard, immediately to the left of the steering column.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of an adverse electrical event or resistance heating within the LLV Rheostat headlight switch mechanism.

Observations

Exterior Inspection:

The subject LLV windshield was broken from fire heat in a circular fashion in front of the driver location, with fire effects to the roof directly above the broken windshield. The driver's side door was open at the time of the fire, allowing interior fire, heat and smoke to exit the right door opening. The left door was slightly open during the fire allowing smoke and heat to vent here. The rear roll-up cargo door was open during the fire and exhibited soot/smoke residue. There were no other exterior fire effects observed.

Interior Inspection:

The interior compartment sustained fire effects to the dashboard, immediately to the left side of the steering column. The plastic dashboard housing was partially consumed and melted by fire heat at this location. Fire traveled upward and impinged on the windshield directly above, causing the glass to fail. The roof sustained heat markings where consumption of the headliner material occurred, directly above the failed windshield section.

Fire effects diminished away from the origin area within the dashboard in an orderly fashion. The driver's seat sustained surface burning to the upper portion of the backrest and the steering column/steering wheel sustained fire effects to the left side from exposure to the dashboard fire origin area.

Inspection of the dashboard fire area evidenced remains of the Rheostat headlight switch mechanism which exhibited unique localized fire effects at the electrical connection section of the switch.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. There was no fire effects observed in the engine compartment.

The battery for the vehicle was located at the front driver's side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be undamaged by fire and no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range.

Undercarriage Inspection:

No fire damage was observed to the underside of the vehicle. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. All four tires were intact.

Fuse Panel Inspection:

Not adverse effects noted.

Area of Fire Origin:

The fire originated within the dashboard at the Rheostat headlight switch mechanism location.

Potential Contributing Factors:

Normal wear and degradation of the headlight switch mechanism located within the area of origin in the dashboard.

Evidence Collected:

The headlight switch mechanism was collected and sent to the Rimkus Laboratory for examination.

Interview:

Ms. , carrier/driver, United States Postal Service, provided the following information:

- Ms. has been with USPS for 18 years. The LLV she was driving at the time of the fire was the normal vehicle for the route.
- She started her route at 7:00 A.M., and it was at about 5:15 P.M. when the problem occurred.

- The LLV was running fine as usual with no problems.
- She was nearing the end of her route for the day and stopped to make a delivery. It was getting dark so she turned on the headlights and proceeded to the next stop.
- She drove a short distance at a turn, and smelled smoke, then saw a little smoke at the dashboard, then saw a “glow” at the light switch so she pulled over and stopped.
- She exited the LLV and called her supervisor to report the problem.

Service Records:

The headlight switch was replaced on WO# 18477534, on February 13, 2017.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

January 10, 2019
RCG File No. 71807507

Photograph 1
Subject LLV 2206747.



Photograph 2
Fire origin in dashboard, yellow arrow.



Photograph 3

Fire origin in dashboard, center. Headlight switch mechanism, yellow arrow.



Photograph 4

Headlight switch mechanism.



January 10, 2019
RCG File No. 71807507

Photograph 5
The engine compartment.



Photograph 6
The undercarriage.



January 10, 2019
RCG File No. 71807507

Curriculum Vitae



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
13900 Alton Parkway, Suite 123
Irvine, California 92618
Telephone: (714) 954-1912

December 4, 2019

Re: RCG File No: 100018219
LLV Number: 2208973
VMF Location: 7001 South Central Avenue Los Angeles, California
Subject: Preliminary/Final Report

On October 21, 2019, a fire occurred involving USPS LLV 2208973. The loss location was reported to be 3456 Locksley Place in Los Angeles, California. The LLV 2208973 was examined at the VMF located at 7001 South Central Avenue in Los Angeles, California.

Rimkus Consulting Group, Inc. was retained to examine the 1992 LLV 2208973 with VIN 1GBCS10A2N2916622 to determine the cause of the fire. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on November 6, 2019. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver and documented the vehicle with photographs.

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be at the left side of the engine at the exhaust manifold.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a hot surface ignition of power steering fluid. A leak in the low-pressure reinforced neoprene fluid line where connected to the power steering fluid reservoir allowed power steering fluid to be blown rearward by the radiator fan onto the exhaust manifold.

Observations

Exterior Inspection:

The front grill area was intact, with smoke/heat effects showing at the grill and left front. The left front fender was severely fire damaged. The right front fender sustained high level fire effects. The carrier section sustained the greatest damage to the left side, diminishing to the right side. Fire effects at the carrier section were reflective of those observed in the front section, with damage diminishing to the right side and to the rear.

The exterior of the cargo area and rear of the LLV were intact.

Interior Inspection:

The carrier compartment interior sustained severe fire effects. All contents were consumed or severely charred from fire heat. Fire effects were most severe in the front left side, diminishing slightly to the right side.

The cargo door was closed at the time of the fire and successfully prevented fire from destroying contents.

Engine Compartment Inspection:

The engine compartment sustained severe fire effects to the left side. All combustible components were consumed or severely charred. Fire effect diminished in an orderly fashion to the right side. The vehicle was equipped with a 2.5 liter 4-cylinder engine with standard ignition coil.

Undercarriage Inspection:

There were no fire effects to the undercarriage except relatively minor fall-down effects below the left side of the engine compartment. The vehicle was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel was positioned under the far right side of the dashboard near the side panel. The outer plastic cover had melted but was still observed surrounding the fuses indicating the fire did not originate at this location.

Area of Fire Origin:

The area of fire origin was determined to be at the left side of the engine at the exhaust manifold.

Potential Contributing Factors:

A leak in the low-pressure reinforced neoprene fluid line where connected to the power steering fluid reservoir allowed power steering fluid to be blown rearward by the radiator fan onto the exhaust manifold.

Evidence Collected:

No evidence was collected.

Service Records:

Service records indicate the power steering fluid pump reservoir cap was replaced during the most recent PM Service due to excessive fluid leakage (confirmed by shop technician). Based on our inspection, the new cap appeared to have functioned, however the fluid leak source was most probably at the return line connection to the power steering fluid pump. We found the power steering fluid reservoir to be empty at the time of our inspection.

Interview:

Carrier/driver, United States Postal Service, provided the following information:

- He began his route at approximately 12:30 P.M. and the fire occurred approximately 45 minutes later.
- The LLV had been serviced about one week ago and was running fine the day of the fire.
- He was traveling on Glendale Boulevard when he smelled smoke. He pulled over and stopped. He exited the LLV and saw light smoke coming from the hood and front grill.
- He did not open the hood.

- He called his Supervisor to request another vehicle. At that time he just thought the engine was only smoking.
- Then about one minute later, he saw flames dripping to the ground under the LLV engine compartment. He immediately called the fire department, which was fortunately only two blocks away.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A Lowe, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

December 4, 2019
Rinkus File No. 100018219

Photograph 1

Severe fire damage to the engine compartment on the mail side.



Photograph 2

The rear of the vehicle, no fire damage.



December 4, 2019
Rimkus File No. 100018219

Photograph 3
Engine compartment.



Photograph 4
Power steering Pump and components.



December 4, 2019
Rinkus File No. 100018219

Curriculum Vitae



David A. Lowe, CFI

Fire Consultant
Fire Division

Background

Mr. Lowe is a Certified Fire Investigator with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services. He is also FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 28 years of experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land.

Investigations and consultations, conservatively estimated at over 2,250, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otay, Mexico and Taber, Alberta, Canada.

Contact Information

(657)-229-9952

dlowe@rimkus.com

13900 Alton Parkway,
Suite 123
Irvine, CA 92618



Rimkus Consulting Group, Inc.
10 Kimler Drive, Suite G
Maryland Heights, Missouri 63043
(888) 286-0127 Telephone
(314) 432-9501 Facsimile

September 18, 2018

Re: RCG File No: 53503320
LLV Number: 2209502
VMF Location: 1725 Clark Street St. Louis, Missouri
Subject: Preliminary/Final Report

Dear

On August 2, 2018, a fire involving LLV 2209502, VIN 1GBCS10A9N2917038 occurred. At the time of the fire, the vehicle was located near 1589 Sierra Vista Plaza in St. Louis, Missouri.

On August 15, 2018, Rimkus Consulting Group, Inc. was retained to examine LLV 2209502. Our inspection of the vehicle occurred on August 24, 2018, at the Vehicle Maintenance Facility located at 1725 Clark Street in St. Louis, Missouri. In the course of our work, we completed an onsite inspection of the vehicle, including photographing the vehicle, arc mapping and witness interviews. This report and case was reviewed by the Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations", and NFPA 1033 Standard for "Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated within the engine compartment of the involved LLV.
2. The specific area of origin was at and around a battery cable routed directly to the starter assembly that sustained an adverse electrical event.
3. The specific ignition sequence and cause of the fire was determined to be an adverse electrical event at the large diameter battery cable that was identified

routed through a retaining clamp to the starter assembly. The cable exhibited physical evidence consistent with adverse electrical activity. The ignition source of the fire was determined to be a direct result of heat associated with resistive heating of the large diameter cable attached to the starter. The first fuel ignited was determined to be fugitive engine oil in direct contact with the large diameter battery cable.

4. Wear and degradation of components allowed an unfused adverse electrical event to develop at the battery hot lead where it was in direct contact with the retaining clamp below the power steering pump within the engine compartment. Oil leaking from the oil filter allowed oil to come in direct contact with the associated high resistance heating from the battery cable attached to the starter.

Observations

Exterior Inspection:

An exterior examination of the vehicle began at the front and continued in a clockwise direction. The four exterior sides of the vehicle were unremarkable, with respect to fire damage. The hood exhibited heat patterns along the right side near the windshield consistent with heat from the underside of the hood. No damage was observed to the exterior cargo area of the vehicle. Based on the fire patterns observed, it was determined the fire initiated within the engine compartment.

Interior Inspection:

The interior of the vehicle was unremarkable with respect to fire and/or heat damage.

Engine Compartment Inspection:

Examination of the engine compartment was completed. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment was observed with moderate to severe fire damage. The underside of the hood exhibited smoke and heat patterns. Fire damage was limited to the lower portion of the right side of the engine compartment. Fire damage was visible on the side of the battery, the air cleaner housing, and on the right side of the engine. The positive battery cable had been cut, and had been removed from the battery post prior to our inspection. Severe heat damage was observed along the large, non-fused battery cables along the right side of the engine compartment. Examination of the cables revealed physical evidence consistent with resistive heating. The cable connected to the starter exhibited physical evidence consistent with arcing on the two severed ends of the cable. No evidence was observed of the fire originating within the brakes, wheel hubs or tires in the area of the engine compartment.

No oil was detected in the oil pan based upon the lack of oil observed on the dipstick.

Undercarriage Inspection:

Examination of the undercarriage was completed. The undercarriage was unremarkable with respect to fire and heat damage. Fire damage along the right side of the engine was visible from below the frame. The severed end of the cable attached to the positive post on the starter exhibited physical evidence of arcing. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged.

The oil filter was not in place on the threaded nipple on the right side of the engine.

Fuse Panel Inspection:

The fuse panel was unremarkable with respect to fire and/or heat damage.

Area of Fire Origin:

Based on the observed patterns of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated inside the engine compartment, along the right side of the engine. The ignition source of the fire was determined to be a direct result of heat associated with resistive heating of the large diameter cable attached to the starter. The first fuel ignited was determined to be fugitive engine oil in direct contact with the large diameter battery cable.

Potential Contributing Factors:

The engine starter was engaged for an extended time period while attempting to re-start the engine. The oil filter had loosened and eventually disengaged from the threaded nipple and was separated from the engine. The loss of the oil filter allowed all of the oil in the engine block and oil pan to leak from the engine.

Evidence Collected:

No artifacts were collected.

Witness Statements:

It was reported by the carrier that while delivering mail in the area near 1589 Sierra Vista Plaza in St. Louis, Missouri, "smoke" was observed within the engine compartment. Reportedly, the oil filter fell off while accelerating and the fire was observed within the engine compartment. No other issues or problems with the vehicle were noted.

Service Records:

A review of the provided service records for the involved LLV was conducted. On August 23, 2018, seven days prior to the fire, a service was conducted that included a new engine replacement within the engine compartment.

After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Philip M. Noah

Philip M. Noah, IAAI-CFI, CVFI
Regional Fire Division Manager

David R. Meyers

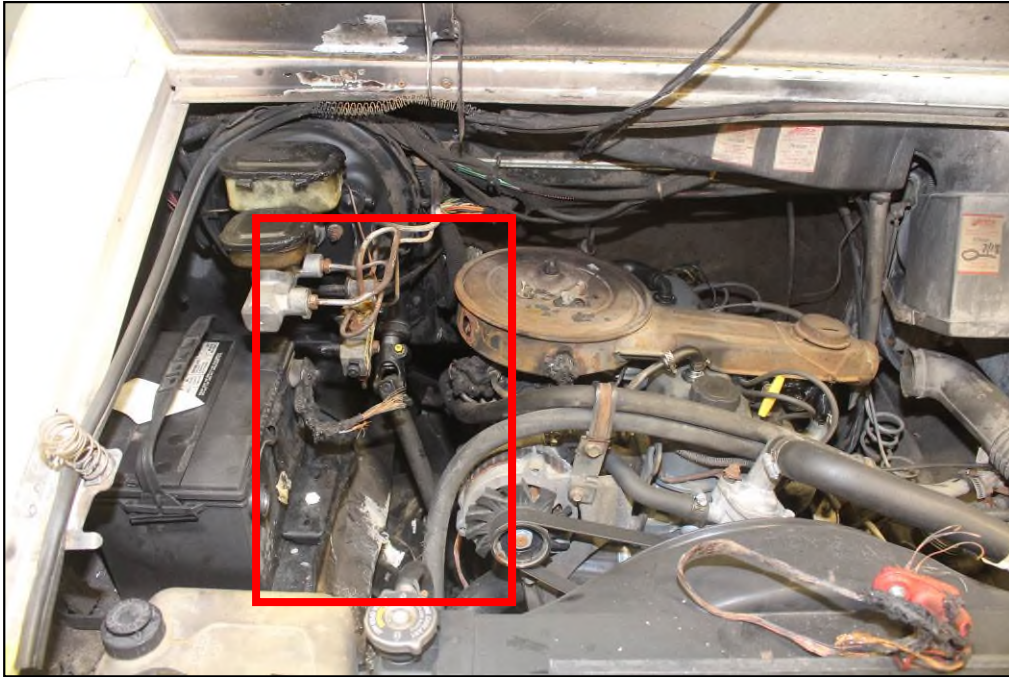
David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curricula Vitae

September 18, 2018
RCG File No. 53503320

Photograph 1

Fire damage along the right side of the engine compartment.



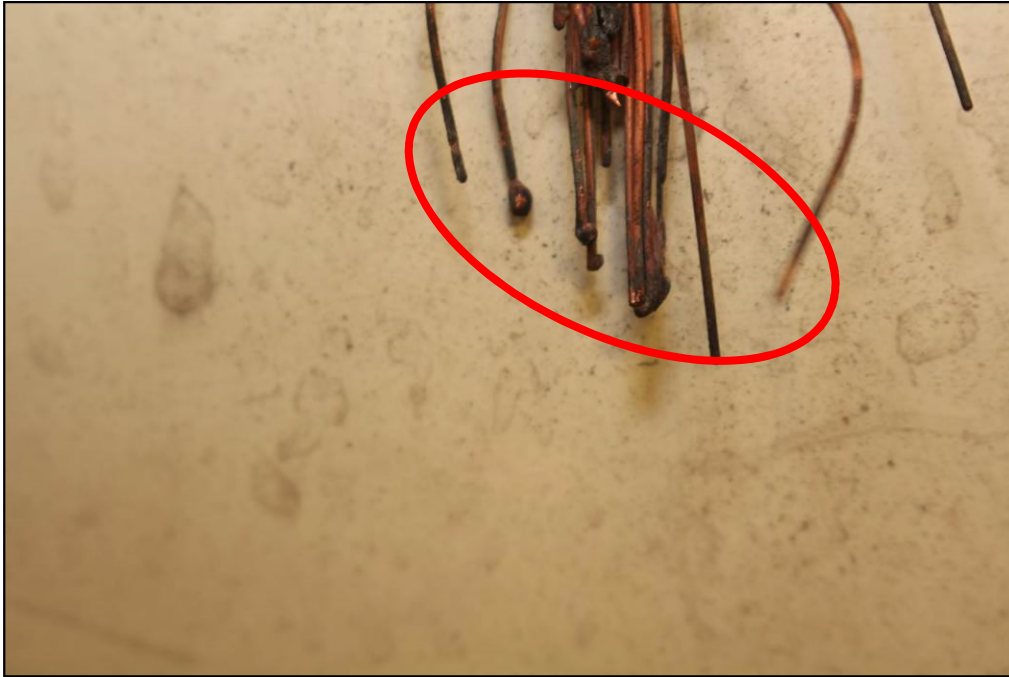
Photograph 2

Positive battery cable lying in the engine compartment.



Photograph 3

Arc damage visible on the positive battery cable.



Photograph 4

View of the front right wheel and undercarriage. Accumulation of oil and road debris along the frame.



Photograph 5

Arc damage on the severed end of the positive starter cable.



Photograph 6

Threaded metal post where the oil filter should attach.



September 18, 2018
RCG File No. 53503320

Curricula Vitae



Philip M Noah, IAAI-CFI Fire Consultant

Mr. Noah is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson investigators and a Certified Fire Investigator (CFI) in the State of Missouri. Mr. Noah is a licensed Private Investigator in the State of Arkansas; Mr. Noah is a licensed Private investigator and licensed Private Fire Investigator in the State of Missouri. Mr. Noah has over 27 years of experience in fire suppression operations, fire/explosion investigations, technical rescue, hazardous material incidents, fire code enforcement, and building construction plans review. He has lead or assisted in the origin and cause of more than 300 fire and explosion investigations. As a fire investigator he conducted origin and cause investigations on fatal structure fires, residential fires, commercial fires and vehicle fires.

Mr. Noah held the position of Fire Marshal with the Springfield Mo Fire Dept. from 2009 to 2015. As a Fire Marshal Mr. Noah served as a public safety bomb technician on the Springfield Mo. Bomb squad, and was a founding member of the Greene County, Missouri Arson task force, during this time he worked closely with the FBI and ATF. While in this position he also performed hundreds of building plans reviews looking for International Fire Code compliance. Mr. Noah has testified and been qualified as an expert in court proceedings pertaining to fire origin and causation.

Mr. Noah has instructed courses in fire scene evidence preservation, explosives awareness and fire investigation awareness for the insurance industry.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Missouri State University - General education and Chemistry
Drury University - Law Enforcement Academy
Certified Fire Investigator: IAAI (Tested)
Licensed Private Fire Investigator: State of Missouri
Licensed Private Investigator: State of Missouri
Certified Fire Investigator: State of Missouri (Tested)
Class "A" Peace officer license: State of Missouri (Tested)
Certified Firefighter 1&2: State of Missouri (Tested)
Certified Fire Officer 1&2: State of Missouri (Tested)
Certified Fire Inspector: State of Missouri (Tested)
Certified Fire Inspector 1&2: International Code Council (Tested)
Certified Bomb Technician: Federal Bureau of Investigation (Tested)
Certified Fire Service Instructor: State of Missouri (Tested)
Certified Major Crimes Investigator: Springfield Mo Police Department (Tested)
International Association of Arson Investigators, 2010- Present
Missouri Professional Fire and Fraud Investigators (past)
International Association of Fire Fighters (past)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
3620 Horizon Drive, Suite 200
King of Prussia, PA 19406
(888) 623-1460 Telephone
(610) 941-1288 Facsimile

October 24, 2016

Re: RCG File No: 47702175
LLV Number: 2211129
VMF Location: 1136 Western Avenue in Pittsburgh, Pennsylvania
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 2211129, VIN 1GBCS10A1N2918653. The vehicle was examined at the USPS Pittsburgh VMF located at 1136 Western Avenue in Pittsburgh, Pennsylvania. The fire incident reportedly occurred 100 Harphen Street in McKeesport, Pennsylvania on September 10, 2016.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on September 20, 2016. Our work to complete this assignment was performed by Fire Consultant Jonathan Sivils, IAAI-CFI. This report and case was reviewed by Mr. Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated within the interior operator compartment of the involved LLV.
2. The specific area of fire origin was determined to be behind the dashboard on the operator side of the LLV.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of the negative conductor to the battery which was pinched between the starter and frame of the LLV. This caused the vehicle not to have a proper ground, causing the ground wires in the vehicle to overheat eventually leading to the fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. All exterior sides of the vehicle revealed no fire damage.

Interior Inspection:

Examination of the interior of the vehicle revealed the only fire damage had occurred to the underside of the instrument cluster located along the front wall behind the drivers' wheel. Examination of the fuse panel components revealed no signs of overheating or melting. Examination of the electrical wiring that transversed behind the dashboard revealed signs of melting to numerous small gage conductors. This was determined to be the area of fire origin.

Engine Compartment Inspection:

The engine compartment was examined. The fuel system was examined and found to be intact with no damage noted. The fuel filter was intact and located along rear of the engine near the fire wall. The fuel system was the GM model. The battery for the vehicle was located at the front right side of the engine compartment and had no fire damage. Inspection of the battery cables revealed the positive was intact and disconnected by VMF staff. The negative cable was intact, however the ground wire revealed signs of overheating and melting and was severed towards the frame. Further inspection of the negative cable revealed the cable was pinched between the frame and starter.

Undercarriage Inspection:

Examination of the undercarriage revealed no damage. The LLV was mounted on an original GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed no signs of overheating. None of the fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the dashboard behind the instrument panel.

Contributing Factors:

A new starter was installed on August 26, 2016. When the starter was installed the negative conductor to the battery was pinched between the starter and frame of the LLV. This caused the vehicle not to have a proper ground, causing the ground wires in the vehicle to overheat eventually leading to the fire.

Evidence Collected:

There was no evidence collected during the investigation.

Interviews:

On September 20 2016, a telephone interview was conducted with the driver of the vehicle at the time of the fire. He reported the following information:

- He was driving the vehicle along his route when he smelled smoke.
- He got out of the vehicle and noticed smoke coming behind the dash board.
- He reported the vehicle was losing power while operating.
- He pulled into his stop and the fans shut off inside, then he noticed smoke coming from the vents on the driver's side.
- He exited the vehicle and saw a small flame near the vents and parking brake.
- A customer came out and extinguished the fire with a fire extinguisher.

Service Records:

A review of the service records for the involved LLV was conducted and confirmed that a new starter was installed in August 2016, at which time the negative conductor was

most probably misrouted and became pinched between the starter and the frame. There was no other service records found that would have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jonathan K. Sivils

Jonathan K. Sivils, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

October 24, 2016
RCG File No. 47702175

Photograph 1
Front of LLV.



Photograph 2
Passenger side of LLV.



October 24, 2016
RCG File No. 47702175

Photograph 3
Passenger area.



Photograph 4
Driver's area.



October 24, 2016
RCG File No. 47702175

Photograph 5
Dashboard.



Photograph 6
Under side of dashboard.



October 24, 2016
RCG File No. 47702175

Photograph 7
Under dashboard.



Photograph 8
Engine compartment.



October 24, 2016
RCG File No. 47702175

Photograph 9
Battery and ground wire.



Photograph 10
Melted ground wire.



October 24, 2016
RCG File No. 47702175

Photograph 11

Melted ground wire from battery.



Photograph 12

Melting of ground wire.



October 24, 2016
RCG File No. 47702175

Photograph 13
Ground wire severed.



Photograph 14

Negative conductor pinched between starter and frame.



October 24, 2016
RCG File No. 47702175

Photograph 15

Close up view of negative conductor pinched.



October 24, 2016
RCG File No. 47702175

CVs



Jonathan Sivils, IAAI-CFI, FIT, CFEI Fire Consultant

Mr. Sivils is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, as well as a Fire Investigation Technician (IAAI-FIT) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). He also holds an Associate of Science Degree in Fire Protection Technology. In a career spanning more than 25 years in the fire service, he has investigated and determined the origin and cause of more than 800 fires, to include commercial structures, residential structures, vehicles, marine and heavy equipment. He has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Sivils is a court-qualified expert witness in Criminal and Civil proceedings. Mr. Sivils has extensive training in fire and criminal investigations.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S Fire Protection Technology – Americus University, Washington D.C. – 2002
Bucks County Fire Chiefs and Firefighters Association
Bucks County Fire Marshal Association
International Association of Arson Investigators
National Association of Fire Investigators
National Fire Protection Association
Pennsylvania Association of Arson Investigators

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2012 – 2015	Donan Engineering Company, Inc.
2007 – 2012	Bucks county Fire Marshal Office, Bucks County, Pa
2005 – 2007	U.S. Department Of Defense Fire and Emergency Services
2009 – 2010	NEFCO Fire Investigations, Philadelphia, Pa
2003 – 2005	U.S. Department of Homeland Security
1998 – 2003	U.S. Department Of Defense Fire and Emergency Services
1993 – 2010	Penndel Fire Company, Penndel, Pa



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
13900 Alton Pkwy., Suite 123
Irvine, California 92618
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

March 2, 2018

Re: RCG File No:

71806633
USPS LLV Number: 2211273
VMF Location: 1900 W. Redlands Avenue, San Bernardino, CA 92403
Subject: Preliminary/Final Report

Dear

On February 7, 2018, a fire occurred involving USPS LLV 2211273. The loss location was reported to be 15525 Mountain View Rd. Desert Hot Springs, California. LLV 2211273 was examined at the VMF located at 1900 W. Redlands Boulevard, San Bernardino, California.

Rimkus Consulting Group, Inc. was retained to examine LLV 2211273, VIN 1GBCS100A5N2918946 to determine the cause of the fire. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver and documented the vehicle with photographs. In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on February 20, 2018. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the steering column of the involved LLV.
2. The specific area of fire origin was determined to be at the horn ring assembly.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of the metallic horn ground contact ring and brass contact button abrasion particles falling into the plastic electrical wiring connector portion of the horn ring assembly. The metallic particles created a high resistance electrical path between conductors which ignited the plastic connector and horn ring assembly.

Observations

Exterior Inspection:

The vehicle sustained no visible fire effects to the exterior.

Interior Inspection:

The carrier compartment was intact with the exception of the steering column and steering wheel where the fire originated and was contained.

The rear mail compartment was intact with no visible evidence of fire effects.

Engine Compartment Inspection:

The engine compartment was intact with no visible evidence of fire effects.

Undercarriage Inspection:

No fire damage or effects were visible to the undercarriage.

The LLV was manufactured in July, 1992, and utilized a General Motors chassis.

Fuse Panel Inspection:

The fuse panel was inspected and all fuses were intact.

Area of Fire Origin:

The fire originated in the steering column at the horn ring assembly.

Contributing Factors:

Normal wear and degradation of the components located within the area of origin where the horn ring and related brass contact friction generated metallic particles/dust which accumulated on adjacent energized electrical circuitry.

Evidence Collected:

Steering column electrical components from the area of origin including the horn ring assembly and turn signal multifunction switch assembly.

Interview:

Mr. , carrier/driver, provided the following information:

- Mr. had been a carrier with USPS for four years.
- The LLV ran fine the day of the fire with no indication of a problem.
- He stopped the LLV to make a delivery, turned off the engine, and turned on the hazard lights.
- When he returned to the LLV, he saw smoke coming from the steering column where the steering wheel joined the column at the ignition switch level.
- He called his supervisor, who was going to send a tow truck.
- He then saw flames at the steering column and immediately called the fire department.
- He recalled that the LLV horn sounded intermittent at about the same time he discovered the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records it was determined that maintenance work had occurred on

the vehicle over the previous year prior to the fire in the area where fire originated, however, the build-up of metallic particles and dust was not discovered.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

March 2, 2018
RCG File No. 71806633

Photograph 1

LLV 2211273. No exterior fire effects.



Photograph 2

Underside of steering column. Fire department cut open left side for access.



Photograph 3

Evidence items from steering column. Apparent origin component, yellow arrow.



Photograph 4

Closer view of apparent origin component.



March 2, 2018
RCG File No. 71806633

Photograph 5

Engine Compartment. No fire damage observed.



Photograph 6

The operator's compartment. No damage except to steering column.



March 2, 2018
RCG File No. 71806633

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1661 East Camelback Road, Suite 124
Phoenix, Arizona 85016
(866) 552-6758 Telephone
(602) 216-2201 Facsimile

April 24, 2019

Re: RCG File No: 01709491
LLV Number: 2211917
VMF Location: 1501 S. Cherrybell Stravenue Tucson, Arizona
Subject: Preliminary/Final Report

Dear Ms.

On March 19, 2019, a fire occurred involving a US Postal Service vehicle which was identified as a 1992 Grumman, LLV 2211917. At the time of the fire, the vehicle was parked with the engine off, near 3330 North Pomona Avenue in Tucson, Arizona.

On March 21, 2019, Rimkus Consulting Group, Inc. was retained to examine LLV 2211917. An inspection of the vehicle occurred on April 2, 2019, at the Vehicle Maintenance Facility located at 1501 S. Cherrybell Stravenue in Tucson, Arizona. In the course of our work, we completed a comprehensive inspection of the vehicle, including photographing the vehicle and a review of the vehicle maintenance history. The work to complete this assignment was performed by Fire Consultant Thomas D. Kane, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations", and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator."

Conclusions

1. The fire originated in the engine compartment in the area of the starter motor on the right (driver) side of the vehicle.
2. The specific area of origin was identified as the positive cable connection on the starter motor.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the starter motor and the lack of remaining physical evidence for examination.
4. We could not eliminate an internal failure of the starter motor generating excessive heat coming in contact with the combustible components within the engine compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. Exterior fire damage was confined to the driver side of the hood and consisted of heat blistering to a small section of paint. There were no obvious signs of pre-fire collision damage.

Interior Inspection:

No fire damage was observed in the interior of the vehicle, which included the rear cargo area, mail tray, driver seat and dashboard,

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5-liter (L), four-cylinder engine. The engine was equipped with a throttle body, fuel-injected system. The vehicle had a standard ignition coil. The engine compartment was observed with moderate fire damage. All of the engine fluids were within their normal operating ranges.

The engine components were intact and covered with soot and smoke deposits. Most of the plastic components, including the brake fluid reservoir and coolant overflow tank, were partially melted. The battery was intact and neutral terminal had been disconnected.

The insulation on the main wiring harness had been burned away down to the starter. There were no obvious signs of adverse electrical activity on the wiring harness.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle, except for a limited area below the wiring harness in the engine compartment that appeared to have been caused by drop down from above. Fuel lines on the undercarriage were intact along the mail-side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and

fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within on the right (driver) side of the engine compartment. All four tires were intact.

The positive cable connection to the starter was secured to the lug post. However the positive cable lug post on the starter had detached from the starter. Signs of adverse electrical activity were observed on the lug post and where it was once mounted to the starter. The lowest area of fire damage was observed on the starter lug post

Fuse Panel Inspection:

The fuse panel was intact and all of the fuses were closed with the exception of one 10 ampere fuse that was open. This fuse was labeled ECMB on the fuse panel.

Area of Fire Origin:

The area of fire origin was located within the starter motor.

Potential Contributing Factors:

The area of fire origin was located within the starter. A failure within the starter could result in resistive heating to the attached electrical conductors and ignition of the wiring insulation, and any nearby combustible materials. This scenario would result in a slow, smoldering fire prior to ignition. The driver's statement is consistent with this type of ignition scenario.

Evidence Collected:

No evidence was collected.

Service Records:

Based upon our review of the vehicle's maintenance records, no work to repair or replace the starter was completed on this vehicle within the past year.

Witness Statements:

The carrier stated that during his shift he noticed that the vehicle began to "bog down and then stalled out." The vehicle would not start back up and there was slight electrical burning odor prior to the fire. The carrier did not report seeing any smoke or flames. A replacement vehicle was brought to the carrier and LLV 2211917 was abandoned where it broke down while the carrier resumed his route. The tow truck driver reported that upon his arrival to retrieve the vehicle, it was on fire. The fire was extinguished by three men with a garden hose and eventually towed to the Tucson VMF.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Thomas D. Kane

Thomas D. Kane, IAAI-CFI, CFIV
Fire Consultant

David R. Meyers

David R. Meyers, IAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

April 24, 2019
RCG File No. 01709491

Photograph 1
Front of LLV 2211917.



Photograph 2
Rear of LLV 2211917.



April 24, 2019
RCG File No. 01709491

Photograph 3
Rear cargo area.



Photograph 4
Mail tray.



April 24, 2019
RCG File No. 01709491

Photograph 5
Driver seat and dashboard.

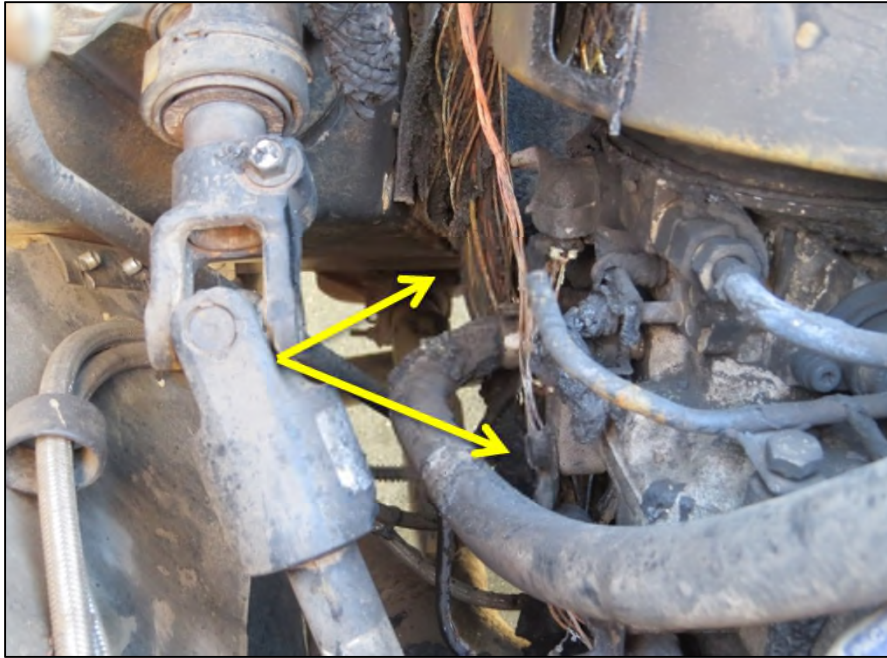


Photograph 6
Engine compartment.



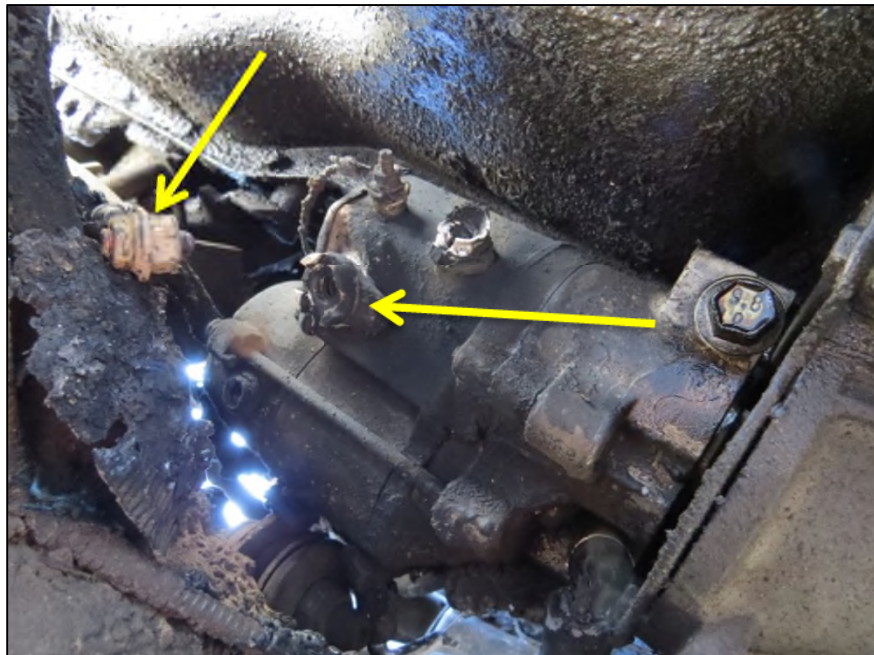
Photograph 7

Burned insulation on wiring harness above starter.



Photograph 8

Starter with adverse electrical activity at positive lug post and positive cable with detached lug connector.



April 24, 2019
RCG File No. 01709491

Curriculum Vitae



**THOMAS D. KANE, I.A.A.I.-C.F.I., P.I.
FIRE CONSULTANT**

Mr. Kane specializes in fire origin and cause investigation, and consultation. Mr. Kane has over twenty-five years of experience in law enforcement with half of his career as an Arson Detective. Mr. Kane has investigated and determined the cause and origin of over one thousand fires occurring in commercial structures, residential homes, recreational vehicles, automobiles, and wild lands. Mr. Kane has been recognized as an expert witness in both criminal and civil court, in the fields of fire cause and origin, building construction, criminal investigations, firearms, transient criminal groups, and issues relating to building safety and security.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

State University of New York, College at Buffalo, Bachelor of Science, Criminal Justice.
City of New York, Police Academy, New York City Police Officer certification.
Suffolk County, New York, Police Academy, New York State Police Officer certification.
Phoenix Regional Police Academy, Arizona Police Officer certification.
International Association of Arson Investigators, Certified Fire Investigator, #28-036.
International Association of Arson Investigators, member since 2002.
International Association of Arson Investigators, Arizona Chapter, member since 2000.
Maricopa County Fire Investigation Task Force, member since 2000
FBI Joint Terrorism Task Force on Arson, formed to apprehend the "Phoenix Mountain Preserve Arsonist," in 2000.
National Association of Bunco Investigators, member since 1999.
Licensed Contractor, Arizona Registrar of Contractors, since 2000.
Licensed Private Investigator, Arizona Department of Public Safety, since 2004.
Licensed Private Investigator, New Mexico PI Board, since 2014.

Mr. Kane has over seven hundred hours of classroom and practical instruction in fire dynamics, arson, and general investigations. Classes have included interviews and interrogations, covert surveillance technology, fire science, fire behavior, fire chemistry, hazardous materials, flammable liquids, fire origin and cause determination, electrical fire investigation, explosion scene investigation, and evidence collection and preservation. These are to mention only some of the areas in which formal training has been received.

EMPLOYMENT HISTORY

1988 - 1989	New York City Police Department (NYPD)
1989 - 1993	Suffolk County Police Department (SCPD)
2004 - 2006	Crawford Investigative Services, Fire Investigator
2006 - 2008	Jerry James and Associates, Fire Investigator
2008 - 2013	Fire Cause Analysis, Fire Investigator
1993 - Present	Scottsdale Police Department (SPD)
2004 - Present	Private, Certified Fire Investigator (IAAI)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2355 Hwy. 36 West, Suite 400
Roseville, MN 55113
(866) 746-5871 Telephone
(630) 321-1847 Facsimile

January 11, 2017

Re: RCG File No:

LLV Number: 53800423
VMF Location: 2212507
Subject: 1144 Fillmore Street Northeast in Minneapolis, Minnesota
Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 2212507 that occurred at 18119 Highway 371 in Brainerd, Minnesota on November 25, 2016. In the course of the work, we examined and documented the fire-damaged vehicle on December 8, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 1144 Fillmore Street Northeast in Minneapolis, Minnesota. The work to complete this assignment was performed by Fire Consultant Lancelot E. Furber, IAAI-CFI/CI. This report was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the interior operator compartment of the involved LLV.
2. The specific area of fire origin was determined at the headlamp switch positioned in the dashboard to the left of the steering wheel.

3. The specific ignition sequence and cause of the fire was determined to be a direct result of a failure of the headlamp rheostat switch which heated to its ignition temperature and ignited available combustible materials.

Observations

Exterior Inspection:

The exterior examination of the vehicle revealed heat and fire damage to the operator's compartment of the vehicle. The lower body, frame, drive lines and rear cargo area revealed heat, smoke, and soot damage.

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments was conducted working from the areas of least fire damage to the areas of greatest fire damage. Our interior examination revealed extensive fire and heat damage to the operator's compartment of the LLV. Examinations of the burn patterns indicated the area of origin of this fire to be located at the area of the vehicle's dashboard, to the left of the operator's steering wheel, above the vehicle's electric control module (ECM) and in the area of the headlamp switch. This area was determined to be the area of fire origin.

Engine Compartment Inspection:

Examination of the engine compartment revealed fire/heat damage throughout this area. Based upon heat/fire patterns it was determined that the fire damage, within the engine compartment, was caused due to fire extension from the operator's compartment. There was no visible evidence to support a claim that the fire originated within the engine compartment. The battery cables, starter motor, and alternator were examined. There was no visible evidence to support a claim that a failure of one or more of these components offered an ignition source for this fire. The involved LLV was equipped with a GM fuel filter system.

Undercarriage Inspection:

Examination of the undercarriage was conducted. The involved LLV was mounted on a GM frame. Based upon heat/fire patterns it was determined that the fire originated above the vehicles floorboard within the operator's compartment of the vehicle. There was no evidence observed that would indicate that the fire had originated on the undercarriage of the vehicle.

Fuse Panel Inspection:

Examination of the fuse panel, located within the operator's compartment, could not be conducted due to the amount of fire damage within this area.

Area of Fire Origin:

The area of origin was determined to be at the area of the vehicle's dashboard to the left of the operator's steering wheel, above the vehicle's electric control module (ECM). The point of origin is at the area of the vehicle's headlamp switch.

Contributing Factors:

A failure of the headlamp rheostat switch contributed to the cause of the fire.

Evidence Collected:

The artifacts of the headlight switch and windshield wiper switch were recovered and collected from the floorboard of the vehicle. The evidence will be secured at the Charlotte, NC office for 90 days for further inspection, if required.

Interviews:

Multiple attempts have been made to interview the carrier, however, at the writing of this report and interview has not been conducted.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no indications of recent repairs or service that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Lancelot E. Furber

Lancelot E. Furber, IAAI-CFI/CI, CFEI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manger

Attachments: Photographs, CVs

January 11, 2017
RCG File No. 53800423

Photograph 1
Exterior of LLV.



Photograph 2
Area of origin.



January 11, 2017
RCG File No. 53800423

Photograph 3
Engine compartment.



Photograph 4
Undercarriage.



January 11, 2017
RCG File No. 53800423

Photograph 5
Headlight switch.



January 11, 2017
RCG File No. 53800423

CVs



**Lancelot E. Furber, GFireE, IAAI-CFI/CI, NAFI-CFEI
Fire Consultant**

Mr. Furber holds an Associates of Arts and Science Degree, in Fire Science, from Pikes Peak Community College and a Graduate Diploma from the Institution of Fire Engineers/Engineering Council located in London, England in addition to numerous specialized training classes in specific areas. He is a Certified Fire Investigator and Fire Instructor through the International Association of Arson Investigators, a Certified Fire and Explosion Investigator through the National Association of Fire Investigators, and is a Certified Firefighter, Certified Fire Officer and Certified Hazardous Material Operations/Technician. Mr. Furber holds certificates from Lehigh County Technical College in Automotive Technology and Residential Electrical Construction. Mr. Furber has testified as an expert witness in arbitration hearings as well as State criminal and civil courts.

Mr. Furber has an extensive background in Fire Investigation, Fire Suppression, and Vehicle Extrication. Mr. Furber is a board member of the National Fire Protection Association (NFPA) Fire Science & Technology Educators Section and the NFPA Fire Service Section. His professional experience includes computer fire modeling, forensic photography, forensic evidence collection, fire and explosion investigation, ignition scenarios and fire travel experimentation, and full scale live fire testing.

Education and Professional Associations

Associates of Arts and Science (Fire Science) – Pikes Peak Community College

Graduate Diploma – Institution of Fire Engineers/Engineering Council

Certified Fire Investigator – International Association of Arson Investigators

Certified Fire Instructor – International Association of Arson Investigators

Certified Fire and Explosion Investigator – National Association of Fire Investigators

Certified Firefighter II – PRO Board/NBFSPQ

Certified Fire Officer II – PRO Board/NBFSPQ

Certified Haz-Mat Operations/Technician – PRO Board/NBFSPQ

Certified Emergency Medical Technician

Member of: International Association of Arson Investigators; International Association of Identification; National Association of Fire Investigators; National Fire Protection Association; National Association of Subrogation Professionals; National Fire Academy Alumni Association; Professional Fire & Fraud Investigators Association; Motorsports Professional Group
Motorsports Safety Group



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
5804 West 74th Street
Indianapolis, Indiana 46278
(800) 971-6587 Telephone
(317) 510-6488 Facsimile

March 2, 2018

Re: RCG File No: 58405614
LLV Number: 2212600
VMF Location: 1499 Martin Luther King Drive Gary, Indiana
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 2212600, VIN 1GBCS10A6P2900670. The vehicle was examined at the USPS Vehicle Maintenance Facility located at 1499 Martin Luther King Drive in Gary, Indiana. The fire incident reportedly occurred on Wicker Avenue in Saint John, Indiana on February 16, 2018.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed the carrier/driver on February 27, 2018. Our work to complete this assignment was performed by Fire Consultant David A. Mager, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the steering column of the involved LLV.
2. The specific area of fire origin was determined to be at the horn ring assembly.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of the metallic horn ground contact ring and brass contact button

abrasion particles falling into the plastic electrical wiring connector portion of the horn ring assembly. The metallic particles created a high resistance electrical path between conductors which ignited the plastic connector and horn ring assembly.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. There was no fire or smoke damage to the exterior of the vehicle. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

Examination of the interior of the vehicle revealed fire damage to the steering column at the steering wheel. We removed the steering wheel exposing the turn signal assembly. The assembly was substantially damaged by fire. Burn patterns indicated the fire originated at the lower section of the assembly at the hazard knob. There was no other fire damage within the passenger or cargo areas of the vehicle.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil.

The battery for the vehicle was located at the front right side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be undamaged and intact; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

Examination of the fuse panel revealed no visible fire damage to the panel or any of the fuses. The plastic housing of the fuse panel was intact as were all of the fuses and connections.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the steering column at the turn signal assembly.

Potential Contributing Factors:

The horn button rubbing on the turn signal cam caused friction and generated metallic particles/dust which accumulated on the energized electric circuitry at the hazard button.

Evidence Collected:

The steering column electrical components from the area of origin including the horn ring assembly and turn signal switch assembly were retained as evidence for future reference.

Interview

An interview with the carrier/driver provided the following information

- She had started her route about 11:00 A.M.
- She was trying to turn left onto Wicker Avenue.
- The left turn signal and flashers were activated at the time of the fire.
- She observed smoke coming up from the steering column.

- She blew on it but that seemed to make it worse.
- She pulled over and exited the vehicle.
- The smoke intensified and she called the post office to advise of the problem.
- She then called 911.
- She stated that she heard what she described as plastic pieces hitting each other when she would turn the steering wheel.
- She had not noticed that sound before the day of the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records, it was determined that maintenance work had occurred on the vehicle in September of 2016 at which time the turn signal assembly was replaced. The build-up of metallic particles and dust was not noted.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Mager

David A. Mager, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

March 2, 2018
RCG File No. 58405614

Photograph 1

Overall view of the vehicle.



Photograph 2

Overall view of the engine compartment.



March 2, 2018
RCG File No. 58405614

Photograph 3

Fire damage at the steering column.



Photograph 4

Remains of turn signal assembly.



March 2, 2018
RCG File No. 58405614

Photograph 5
Remains of horn button.



March 2, 2018
RCG File No. 58405614

CVs



DAVID A. MAGER, CFI FIRE CONSULTANT

Mr. Mager is an International Association of Arson Investigators Certified Fire Investigator, Illinois State Fire Marshall Office Certified Fire Investigator, Certified Fire Officer II, Hazardous Materials Technician "B" and a Illinois Department of Public Health Certified Paramedic.

Mr. Mager has an extensive professional background in the areas of firefighting and fire investigations, and has investigated over five hundred fires. His professional experience includes fire and explosion investigations, fire protection and detection system inspections as well as hazardous materials mitigations.

As an International Association of Arson Investigators Certified Instructor and a Certified Instructor II through the Illinois State Fire Marshall Office, Mr. Mager has conducted numerous live fire training exercises for Fire Fighters and Fire Investigators using authentic room furnishings as well as classes on fire behavior and evidence preservation.

Mr. Mager is a Retired Deputy Fire Chief and had been the Training Officer with the Midlothian, IL. Fire Department. He was an Assistant Team Leader for the Southwest Hazardous Materials Response Team and routinely responded to fire and hazardous materials incidents, fire investigations and conducted life safety inspections within the municipality.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator - Illinois State Fire Marshall Office
Certified Fire Investigator - International Association of Arson Investigators
Certified Instructor – International Association of Arson Investigators
Certified Fire Officer II – Illinois State Fire Marshall Office
Certified Hazardous Materials Technician "B" - Illinois State Fire Marshall Office
Certified Fire Department Incident Safety Officer – Illinois State Fire Marshall Office
International Association of Arson Investigators – Member
International Association of Arson Investigators (Illinois Chapter) – Member

EMPLOYMENT HISTORY

2008 – Present	Rimkus Consulting Group, Inc.
1987 – 2015	Midlothian Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
8910 Purdue Road, Suite 170
Indianapolis, IN 46268
(800) 971-6587 Telephone
(317) 510-6488 Facsimile

August 24, 2016

Re: RCG File No: 58404858
LLV Number: 2212961
VMF Location: 1121 Miller Road in Kalamazoo, Michigan
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 2212961 that occurred at 222 Kings Road in Niles, Michigan on July 23, 2016. In the course of the work, we examined and documented the fire damaged vehicle and interviewed the carrier/operator on July 29, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 1121 Miller Road in Kalamazoo, Michigan. In the course of our work, we inspected and photographed the vehicle, reviewed maintenance and repair records, and completed witness interviews. The work to complete this assignment was performed by Fire Consultant, John W. Gray, IAAI-CFI. This report was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations."

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin within the engine compartment could not be conclusively determined due to the severity of the damage and the lack of remaining physical evidence.

3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the damage and multiple potential ignition sources in the area that could not be conclusively eliminated.

Observations

Exterior Inspection:

The exterior examination of the vehicle revealed evidence of fire damage throughout the vehicle with the most concentrated damage in the engine compartment.

Interior Inspection:

The interior examination of the vehicle revealed evidence of fire damage throughout the compartment. We observed that the instrument cluster and electrical wiring in the dashboard area were severely damaged and largely consumed. There was smoke and heat damage observed throughout the passenger and cargo compartments.

Engine Compartment Inspection:

The engine compartment was severely damaged throughout. The vehicle was equipped with a four-cylinder, 2.5 liter, gasoline engine. The engine oil level and transmission fluid level was observed to be within normal limits. We observed adverse electrical activity (arcing) on the positive electric cable routed to the alternator. We were unable to determine if the arcing was causative of the fire or was the result of the fire attacking the energized cable. There was no remaining evidence that indicated the vehicle was equipped with a High Energy Ignition (HEI) distributor. The LLV was equipped with a GM fuel filter system.

Undercarriage Inspection:

Examination of the undercarriage of the vehicle indicated no visible evidence of fire damage in the undercarriage. The involved LLV was mounted on a GM frame. The examination of the undercarriage was limited because the facility had no means to raise the vehicle for access.

Fuse Panel Inspection:

Examination of the fuse panel in the operator's compartment indicated that the fuse panel was severely fire-damaged with the fuses consumed and/or collapsed into the debris.

Area of Fire Origin:

The area of fire origin was determined to be in the engine compartment of the vehicle.

Potential Contributing Factors:

It was our opinion that due to the severity of the damage, the potential contributing factors could not be conclusively determined.

Evidence Collected:

There was no evidence collected from the vehicle per client instructions.

Interviews:

On July 29, 2016, we interviewed the carrier/operator. He stated that he was driving the vehicle on his regular route when he began to notice light smoke coming from the engine compartment. He stated that the engine on the vehicle suddenly "shut off." He stated he attempted to restart the vehicle but that the starter made only a clicking noise. He stated he got out of the vehicle at which time he noticed a fire was occurring in the engine compartment. He was unable to describe where the fire was occurring within the engine compartment. He stated that he began removing mail from the vehicle. He stated that the Niles Township Fire Department arrived to extinguish the fire which had spread throughout the vehicle.

Service Records:

A review of the service records for the involved LLV did not indicate any recent repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

John W. Gray

John W. Gray, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 24, 2016
RCG File No. 58404858

Photograph 1
Front view of LLV 2212961.



Photograph 2
Passenger side view of LLV 2212961.



August 24, 2016
RCG File No. 58404858

Photograph 3
Examination of the passenger compartment.



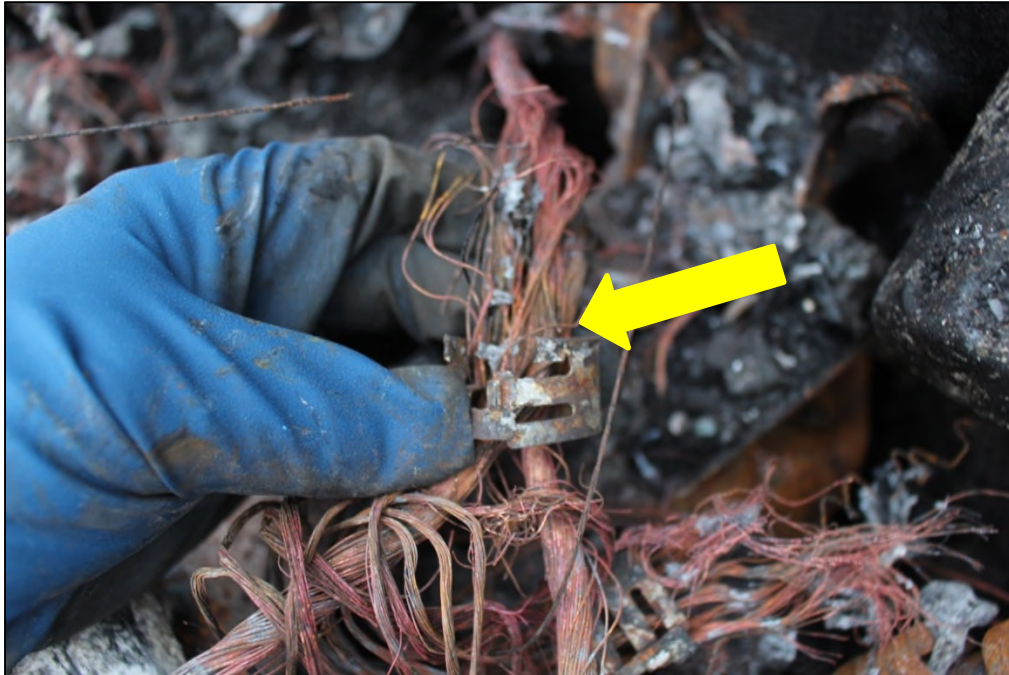
Photograph 4
Examination of the engine compartment.



August 24, 2016
RCG File No. 58404858

Photograph 5

View of electrical activity (arcing) on alternator cable.



Photograph 6

View of the fuel filter.



August 24, 2016
RCG File No. 58404858

Photograph 7

View of the undercarriage.



August 24, 2016
RCG File No. 58404858

CVs



**JOHN W. GRAY C.F.I., C.V.F.I.
FIRE CONSULTANT**

Mr. Gray is a Certified Fire Investigator (CFI) through the International Association of Arson Investigators and a Certified Vehicle Fire Investigator (CVFI) through the National Association of Fire Investigators. He is also certified as a Fire Investigator I by the State of Indiana. Mr. Gray was honorably retired after a 25-year career as a police officer with the Marion County Sheriff's Department in Indianapolis.

Since joining Rimkus Consulting Group in March 2005, Mr. Gray has performed hundreds of fire investigations for insurance companies, law firms, and property owners. His professional experience includes residential, commercial, and vehicle fire origin and cause investigation. Mr. Gray has testified in matters regarding fire origin and cause in both civil and criminal proceedings.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator (CFI) International Association of Arson Investigators
Certified Vehicle Fire Investigator (CVFI) National Association of Fire Investigators
Certified Fire Investigator I State of Indiana
Certified Law Enforcement Officer (Retired) State of Indiana
Licensed Private Investigator (IN-IL-OH-KY-MI-PA-LA)

Member of: International Association of Arson Investigators (IAAI)
International Association of Arson Investigators (Indiana Chapter # 14)
National Association of Fire Investigators (NAFI)

EMPLOYMENT HISTORY

2005 – Present	Rimkus Consulting Group, Inc.
1980 – 2005	Marion County (Indiana) Sheriff's Department.
1974 – 1980	McCormick/All Portions Inc.



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
6374 NW 97th Avenue
Doral, Florida 33178
Telephone: (800) 861-7644
Certificate of Authorization No. 8301

September 12, 2019

Re: RCG File No: 100010527
LLV Number: 2213178
VMF Location: 2250 N.W. 72 Avenue Miami, Florida
Subject: Preliminary/Final Report

Dear,

Rimkus Consulting Group, Inc. was retained to determine the origin and cause of a fire incident that occurred on August 5, 2019, involving US Postal Service vehicle LLV 2213178, VIN 1GBCS10A9P2901179. The vehicle was identified as a 1993 Chevrolet, 3-door cargo style van manufactured at the Moraine, Ohio plant operated by General Motors, Inc. The vehicle was a rear-wheel drive, postal service delivery vehicle powered by an L4, 2.5 Liter gasoline engine with an automatic transmission, hydraulic brakes, and throttle body fuel injection (TBI).

The vehicle fire incident occurred at Ali Baba Avenue and Aladdin Street in Opa-Locka, Florida. The driver at the time of the incident was USPS employee Demia Williamson. The vehicle was examined at the VMF Postal Facility located at 2250 N.W. 72 Avenue in Miami, Florida. The vehicle had been moved into the enclosed garage area of the VMF for storage.

Our work to complete this assignment was conducted by Technical Fire Manager David R. Meyers, IAAI-CFI (V) on August 8, 2019. During our investigation of the fire, we conducted an examination of the fire damaged vehicle and documented the vehicle with digital photographs. A technical review of this report was completed by Thomas W. Young, IAAI-CFI (V), VP, Fire Division.

During the work, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standards for Professional Qualifications for Fire Investigator."

Conclusions

1. The vehicle sustained severe fire damage and mass loss to the engine compartment and interior compartment from a fire originating within the dashboard area.
2. Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the interior compartment of the vehicle. The area of origin was determined to be on the mail side of the dashboard. The area of origin was within the lower area of the dashboard. A specific area of origin was inconclusive, however the auxiliary fan motor was observed with the most severe fire damage. The burn patterns observed appeared to be progressing upward and outward from this location.
3. The specific ignition sequence and cause of the fire could not be conclusively determined. Based on the remaining physical evidence and the carrier's statements, the most probable cause of the fire was due to a failure of the auxiliary fan causing an adverse electrical event (resistive heating, arcing, etc.)

Observations

Exterior Inspection:

In order to consider the origin and all possible fire causes, the vehicle was examined from the areas that were least damaged to those most severely damaged with considerations of fire dynamics, ventilation, fire load, and other contributing factors.

Initial inspection of the exterior revealed that the vehicle had sustained severe fire damage and mass loss to the front portions of the vehicle in the area of the dashboard on the mail side. The engine compartment had sustained severe fire damage and mass loss near the bulkhead on the mail side of the vehicle. The windshield and interior compartment top of the cab was consumed by the fire. The dashboard and steering column were observed consumed and dislodged from its original location.

Burn patterns observed indicated that the fire originated on the mail side of the vehicle at the dashboard area and progressed upward and outward from this location into the interior and engine compartments.

There was no visible, physical evidence of body damage that would indicate this vehicle being involved in a recent collision. There were no license plates mounted on the vehicle.

The vehicle was equipped with four rims and tires. The wheels and tires on the vehicle at the time of fire appeared to meet manufacturer's specifications for the vehicle.

The tires were manufactured by the Goodyear Tire Company. There was a minor lubricant leak visible on the axle hub of the left front wheel assembly.

The fuel door was observed with no fire damage, and the fuel cap was intact. The filler neck appeared tight and intact.

The exterior of the vehicle revealed no visible indications that the fire originated from the exterior of the vehicle.

Interior Inspection:

Examination of the rear cargo area revealed that the fire progressed into this area from the front portions of the vehicle. This area contained mail and mail packages at the time of the examination. No indications were observed that the fire originated from the cargo area of the vehicle.

Examination of the interior compartment revealed severe fire damage and mass loss to the dashboard area, the seat, the steering column and the mail tray. The most severe fire damage was observed to the mail side of the interior area at the dashboard. Mass loss to the dashboard was observed in this area. Burn patterns indicated that the fire originated in the area of the ventilation auxiliary fan and progressed upward and outward from this location.

The remains of the auxiliary fan were observed in the fire debris and examined. The fan was observed with severe fire damage and mass loss. The fan motor was unable to be turned indicating it may have failed prior to the fire. However, due to the lack of remaining physical evidence it was inconclusive as to the failure of the fan.

Engine Compartment Inspection:

Examination of the engine compartment revealed the battery and battery cables had sustained severe fire damage located in the left side of this compartment. The cables and battery revealed no visible evidence of adverse electrical activity or physical damage.

There was severe fire damage to all portion of the engine compartment. The most severe fire damage and mass loss was on the mail side in the area of the bulkhead. Based on the burn patterns observed, it was determined that the fire progressed upward and outward from the area of the bulkhead on the mail side and throughout the engine compartment. No indications were observed that the fire originated within the engine compartment.

The oil dipstick was removed, and the oil level evaluated. Based on the observed level it appeared that the oil level was within normal volume according to the manufacturer's

recommendations. An examination of the oil filter and oil filter gasket revealed no visible damage or leaks. The oil filter appeared to have been recently installed.

Undercarriage Inspection:

An examination of the undercarriage revealed fire damage in the area of the engine compartment. The fire damage appeared high in the remaining components. The transmission, the exhaust system and the fuel system showed no indications that the fire originated from their locations. Due to these observations, the possibility of a fire originating beneath the vehicle was eliminated. The vehicle was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel located on the lower portion of the driver's side of the interior was consumed by the fire and unable to be examined during our inspection. Based on the remaining burn patterns, no indications were observed to indicate the fire progressed from the area of the fuse panel.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the interior compartment of the vehicle. The area of origin was determined to be on the mail side of the dashboard. The area of origin was within the lower area of the dashboard. A specific area of origin was inconclusive, however, the auxiliary fan motor was observed with the most severe fire damage. The burn patterns observed appeared to be progressing upward and outward from this location.

Potential Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined. Based on the remaining physical evidence and the carrier's statements, the most probable cause of the fire was due to a failure of the auxiliary fan causing an adverse electrical event (resistive heating, arcing, etc.)

Evidence Collected:

No artifacts were collected.

Witness Statement:

The vehicle fire incident occurred at Ali Baba Avenue and Aladdin Street in Opa-Locka, Florida. The driver at the time of the incident was USPS employee.

She reported initially observing smoke emitting from the mail side dashboard area when she turned on the auxiliary fan.

Service Records:

A review of the service records provided for the LLV did reveal recent repairs that may have caused or contributed to the cause of the fire including the recent installation of a new engine. The last preventative maintenance inspection was completed on May 18, 2019. An engine replacement was completed in January, 2018.

This report contains a summary of our findings and does not include a full description of the investigative tasks and methodology we took to reach our conclusions. If a full final report of findings is needed, one will be completed at the request of USPS.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David R. Meyers

David R Meyers, IAAI-CFI (V)
Technical Fire Manager

Thomas W. Young

Thomas W. Young, IAAI-CFI (V)
VP, Fire Division

Attachments: Photographs, Curriculum Vitae

September 12, 2019
Rinkus File No. 100010527

Photograph 1
1993 LLV 2213178.



Photograph 2
Most severe fire damage to the mail side bulkhead area.



Photograph 3

Fire scene photo, observed the most severe fire damage to the mail side.



Photograph 4

Fire scene photo, observe fire within the interior compartment.



Photograph 5

The engine compartment, observed the most severe fire damage to the mail side.



Photograph 6

The mail side of the engine compartment, mass loss to the bulkhead area.



September 12, 2019
Rimkus File No. 100010527

Photograph 7

The auxiliary fan and components.



Photograph 8

The auxiliary fan.



Photograph 9

The auxiliary fan, the motor would not turn.



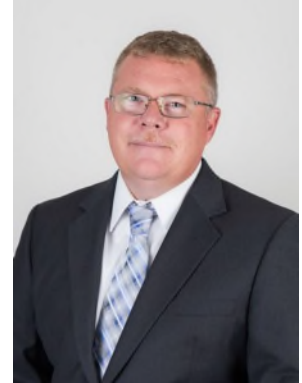
Photograph 10

Observed the severe fire damage progressing from the fan motor area.



September 12, 2019
Rimkus File No. 100010527

Curriculum Vitae



David R. Meyers, CFI, CFI (V)

Manager

Fire Division/Eastern Region

Background

Mr. Meyers is a Certified Fire Investigator (CFI) with the International Association of Arson Investigators (IAAI) and a Certified Fire Investigator with the National Board on Fire Service Professional Qualifications (Pro Board). Mr. Meyers has extensive experience in all facets of the fire service, having spent over 30 years in the municipal fire service. He spent over 20 years as a fire investigator with multiple jurisdictions, where he investigated and determined the origin and cause of more than 1,000 fires occurring at commercial and residential properties, as well as vehicles, marine vessels, and heavy equipment.

This U.S. Army veteran started his professional career in municipal fire service, where he served as a shift commander, a firefighter paramedic, a fire inspector, and an assistant fire chief. He is certified as a Firefighter II, Hazardous Materials Technician, and HAZWOPER Specialist. He is also a state-licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

Mr. Meyers possesses extensive knowledge of National Fire Protection Association fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. He has reviewed and approved various fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an emergency management coordinator and as a firefighter instructor. One achievement worth noting is his role in conducted fire protection reviews and provided reports and recommendations for NASCAR at large assembly race tracks across the nation.

He has testified in numerous court proceedings and depositions and has completed various educational seminars and continuing education courses in the field of fire investigation.

Professional Engagements

- Fire Investigations – International
 - Afghanistan – (1983-2012), Participated in U.S. military operations in Afghanistan. Performed fire inspections and fire investigations in remote locations throughout Afghanistan in areas with little or no

Contact Information

(704) 896-6227

drmeyers@rimkus.com

5900 Harris Technology Blvd.,
Suite P
Charlotte, NC 28269

fire-prevention programs and provided written documentation to the U.S. military and congressional committees on the safety and well-being of deployed military personnel.

- Fire Origin and Cause Investigations
 - Fire Marshal – Milwaukee County, WI (2012-2013), Investigated and determined the origin and cause of more than 300 fires and explosions, including cases involving commercial structures, residential structures, passenger vehicles, and fatalities.
 - Assistant Fire Marshal – Concord, NC (2001-2011), Investigated and determined the origin and cause of more than 300 fires and explosions, including cases involving include commercial structures, residential structures, passenger vehicles, and fatalities.
- Fire Code Compliance Evaluations
 - Fire Plans Reviewer – Concord, NC (2001-2011), Certified through the National Fire Academy as a Fire Plans reviewer and through the International Code Council as a Fire Inspector III. As a plans reviewer he conducted commercial building plans review for the City of Concord Fire Department, which included evaluating building plans for fire code compliance.
 - Fire Inspector III – Concord, NC (2001-2011), Evaluated hundreds of buildings for code compliance and conducted plans reviews of manufacturer-required installation procedures on sprinkler systems, fire alarms systems, and fire suppression systems.
 - NASCAR Fire Prevention/Protection – Concord, NC (2006-2007), Part of NASCAR's efforts to evaluate a growing problem of large-assembly racetrack fire prevention and protection concerns. Conducted evaluations of sanctioned NASCAR racetracks throughout the nation and identified fire code violations and potential hazards, and provided written recommendations and pre-planning guidelines for all NASCAR-sanctioned racetracks.
- Fire Cause and Origin Training
 - Coordinated and conducted mass-casualty incident trainings and simulations including aircraft crash and rescue along with Incident Command leadership training for the US military and for FAA training and airport certifications in North Carolina and Wisconsin.

Forensic Engagements

- Fire/Arson/Explosion Investigations – Residential/Commercial
 - Large-Loss Property Fires – multiple locations in NC, SC, and VA (2013-2019), Investigated complex, large-loss fires occurring at apartments, restaurants, warehouses, and manufacturing plants. Coordinated logistics during multi-party examinations.
 - Fatality Fires – multiple locations in NC, SC, and VA (2013-2019), Lead investigator in multi-fatality losses in residential and commercial properties.
 - Conducted lead investigations for international assignments in West Africa, South America, Central America, West Indies, and the Bahamas.
- Fire/Arson/Explosion Investigations – Automotive/Heavy Equipment/Conveyances

- Recreational Vehicle Fires – multiple locations in NC, SC, and VA (2013-2019), Performed various recreational vehicle fire investigations for both plaintiffs and defendants.
- Heavy Construction Equipment Fires – multiple locations in NC, SC, and VA (2013-2019), Performed various heavy construction equipment fire investigations.

Professional Experience

- Rimkus Consulting Group, Inc. 2013 – Present
 - Manager – Fire Division/Eastern Region

Performs fire, arson, and explosion evaluations in commercial and residential facilities, automobiles, heavy equipment, and conveyances. Investigates fires involving appliances and electrical devices. Collects, documents, and preserves evidence to ensure chain of custody. Conducts interviews with witnesses, responding firefighters, state and local fire marshal agencies, and other pertinent third-party individuals and organizations. Prepares detailed, written investigative reports pertaining to the origin and cause of fire losses. Assesses potential liability and subrogation issues, and provides expert technical and scientific support to clients. Conducts code compliance research to evaluate potential electrical, gas, and installation code violations. Assists personnel with product design failure analysis to determine if the product was the cause or contributing factor in a loss.
- Odell Fire and Rescue Department 2001 – Present
 - Fire Captain/Firefighter/Emergency Medical Technician/Fire Investigator

Responsible for responding to calls for emergency and non-emergency service. Firefighter/captain responsible for fire suppression activities and emergency medical care. Captain in charge of all fire prevention, fire investigations, and fire inspections. Responsible for the supervision of fire department employees and incident command.
- Milwaukee County Fire Department 2012 – 2013
 - Assistant Fire Chief/County Fire Marshal

Responded to fire scenes to conduct origin and cause investigations, collect and preserve evidence, interview and take statements from witnesses and suspects, and write detailed reports of determination of fire investigations and criminal offenses. Conducted fire inspections, reviewed plans, and performed code consultation for local fire codes and applicable standards for compliance. Responded to emergency incidents and conducted Incident Command functions. Assisted in instructing juveniles and other members of the community in fire education initiatives, including the juvenile fire-setters program. Conducted training for firefighters in fire suppression, fire prevention, and fire investigation techniques.
- North Carolina Air National Guard 2001 – 2012
 - Fire Protection Specialist
- North Carolina Department of Public Safety 2010 – 2012
 - Assistant Fire Chief/Fire Marshal

Responded to fire scenes to conduct origin and cause investigations, collect and preserve evidence, interview and take statements from witnesses and suspects, and write detailed reports of determination of fire investigations and criminal offenses. Conducted fire inspections, reviewed plans, and performed code consultation for local fire codes and applicable standards for compliance. Responded to emergency incidents and conducted Incident Command functions. Assisted in instructing juveniles and other members of the community in fire education initiatives, including the juvenile fire-setters program. Conducted training for firefighters in fire suppression, fire prevention, and fire investigation techniques.

- Concord Department of Fire & Life Safety 2004 – 2007
 - Assistant Fire Marshal
Responded to fire scenes to conduct origin and cause investigations, collect and preserve evidence, interview and take statements from witnesses and suspects, and write detailed reports of determination of fire investigations and criminal offenses. Conducted fire inspections, reviewed plans, and performed code consultation for local fire codes and applicable standards for compliance. Responded to emergency incidents and conducted Incident Command functions. Assisted in instructing juveniles and other members of the community in fire education initiatives, including the juvenile fire-setters program. Conducted training for firefighters in fire suppression, fire prevention, and fire investigation techniques.
- Wilmington Fire Department 1996 – 2001
 - Fire Marshal/Firefighter Paramedic
Responded to fire scenes to conduct origin and cause investigations, collect and preserve evidence, interview and take statements from witnesses and suspects, and write detailed reports of determination of fire investigations and criminal offenses. Conducted fire inspections, reviewed plans, and performed code consultation for local fire codes and applicable standards for compliance. Responded to emergency incidents and conducted Incident Command functions. Assisted in instructing juveniles and other members of the community in fire education initiatives, including the juvenile fire-setters program. Conducted training for firefighters in fire suppression, fire prevention, and fire investigation techniques.
- United States Army 1983 – 2012
 - Staff Sergeant
Served in Infantry, Airborne, and Air Assault divisions during active military service between 1983 and 2012. Special assignments included:
 - Operation Enduring Freedom – Kandahar, Afghanistan (2010)
 - Operation Jump Start – Arizona Border Patrol (2008)
 - Operation Iraqi Freedom – Ali, Iraq (2006)

Education, Certifications, Professional Associations, and Awards

- Fire Science, B.S.: Kaplan University (2015)
- Fire Protection, A.S.: Community College of the Air Force (2012)
- Fire Science, A.S.: Central Piedmont Community College (2011)
- Certified Fire Investigator (CFI): International Association of Arson Investigators (IAAI)

- Certified Fire Inspector III: International Fire Service Accreditation Congress (IFSAC)
- Certified Firefighter II: North Carolina Department of Insurance's Fire and Rescue Commission
- Certified Hazardous Materials Technician: International Fire Service Accreditation Congress (IFSAC)
- Certified HAZWOPER Specialist: Cincinnati State College
- U.S. Air Force Non-Commissioned Officer: Certificate of Induction
- North Carolina International Association of Arson Investigators (NCIAAI): Member
- Federal Emergency Management Agency (FEMA) Certificate of Achievement: Professional Development Series in Emergency Management
- Odell Fire and Rescue: Firefighter of the Year (2007)
- NASCAR: Certification of Appreciation
- Memberships: International Association of Arson Investigators (IAAI); International Association of Fire Chiefs (IAFC); International Fire Marshals Association (IFMA); National Association of Fire Investigators (NAFI); National Fire Protection Association (NFPA); North Carolina State Firefighter's Association (NCSFA)

Continuing Education

- Department of Defense (IFSAC): Rescue Technician II (2012); Fire Inspector III (2008); Fire Officer II (2008); Hazmat Technician (2008); Fire Instructor II (2007); Hazmat Incident Commander (2006); Airport Firefighter (2004); Firefighter II (2003)
- National Fire Academy: Fire Inspection Principles (2013); Principles of Fire Protection: Structures and Systems (2005, 2011); Interview and Interrogation, Courtroom Testimony (2008); Fire/Arson Investigation (2007); Testing and Evaluation of Water Supplies for Fire Protection (2005); Code Management: A Systems Approach (2004)
- Cincinnati State College: OSHA HAZWOPER Specialist (2000); Confined Space Rescue (2000)
- Public Agency Training Council (PATC): Develop, Lift, & Document Fingerprints (2007); Fire Origin and Cause – NFPA 921 (2005); Electrical Fire Investigation (2003); Arson Case Management (2000)
- IAAI Training: Managing Complex Fire Scene Investigations (2011); HAZWOPER Standard (2010); Investigating Motor Vehicle Fires (2010); Vacant and Abandoned Buildings: Hazards and Solutions (2010); Scientific Method for Fire and Explosive Investigation (2005, 2009); A Ventilation-Focused Approach to the Impact of Building Structures and Systems on Fire Development (2009); Investigating Fatal Fires (2009); Vehicle Fire Investigations (2007); Basic Fire Investigation (2005); Understanding Fire Through the Candle Experiments (2001); The Greater Cincinnati Regional Arson and Fire Seminar (1998)
- Pro Board: Fire Investigator, NFPA 1033 (compliant with current edition)
- North Carolina Department of Insurance's Fire and Rescue Commission: Hazmat Technician (2008); Airport Firefighter (2004); Fire Inspector III (2002); Firefighter II (2002)
- Ohio Fire Academy: NFPA 1123 Regulations for Pyrotechnics Course (2000) Underground Storage Tank Installers Regulation, Modern American Safety Training (1999); Underground Storage Tank: Fire Service Certification (1999); Juvenile Fire-Setters Course (1998); Underground Storage Tank: Inspector Certification (1998); Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police (1998); Firefighter II (1996)



Rimkus Consulting Group, Inc.
5900 Harris Technology Boulevard, Suite P
Charlotte, North Carolina 28269
Telephone: (704) 896-6227
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2019

July 19, 2019

Re: RCG File No: 100006465
LLV Number: 2213197
VMF Location: 201 N. Morrow Boulevard Greensboro, North Carolina
Subject: Preliminary/Final Report

Dear,

On May 24, 2019, a fire involving USPS LLV 2213197 reportedly occurred while the vehicle was being driven in the area of 3917 Lawndale Drive in Greensboro, North Carolina. The vehicle was manufactured by GMC in 1992 and was a Grumman model with VIN 1GBCS10A1P2901242.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Greensboro VMF located at 201 N. Morrow Boulevard in Greensboro, North Carolina. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on June 25, 2019. The vehicle examination was conducted by Fire Consultant Van D. Tuley, IAAI-CFI (V). A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations" and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated at the rear of the engine compartment, where a crimped spark plug wire was located.

2. The fire damage that was observed in the engine compartment was consistent with a fire originating where a crimped spark plug wire was located. The resistive heating that occurred as a result of the crimped spark plug wire resulted in the ignition of the insulation around the wire, which then spread to nearby plastic wiring covers and wiring insulation.
3. The specific ignition sequence and cause of the fire was due to resistive heating that occurred as a result of the crimped spark plug wire, resulting in the ignition of the insulation around the wire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. No visible fire damage was observed on the exterior of the vehicle.

Interior Inspection:

No visible fire damage was observed to the interior of the vehicle. The odometer on the vehicle displayed approximately 203,815 miles.

Engine Compartment Inspection:

The vehicle was equipped with a single-port fuel-injected 2.5L four-cylinder engine with a standard ignition coil. All of the fire damage was contained to the right rear portion of the engine compartment where the wiring harnesses were located. The lowest area of fire damage was to a wiring harness that was located behind the right side of the engine. Portions of the insulation for the wiring had been consumed by the fire, exposing the electrical wiring. The only fire damage to the wiring that was observed pertained to the wiring for the fuel injector. A section of the positive wire for the fuel injector was missing.

Sections of the plastic covers for the wiring harnesses had been consumed by the fire. Wiring harnesses located at the upper portion of the bulkhead had also been fire damaged. This fire damage was the result of fire impinging on the wiring harness and plastic cover for the wiring harness.

No other fire damage was observed in the engine compartment.

When the damaged wiring harnesses were removed from the vehicle, a crimped spark plug wire was found at the rear of the engine. The insulation for the spark plug wire had burned away where the wire was crimped and the spark plug wire was severely fire damaged.

Undercarriage Inspection:

No visible fire damage was observed to the undercarriage of the vehicle. The vehicle was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel was intact and free of fire damage. There were no blown fuses found in the fuse panel.

Area of Fire Origin:

The fire originated at the rear of the engine compartment, where a crimped spark plug wire was located.

Potential Contributing Factors:

The fire damage that was observed in the engine compartment was consistent with a fire originating where a crimped spark plug wire was located. The resistive heating that occurred as a result of the crimped spark plug wire resulted in the ignition of the insulation around the wire, which then spread to nearby plastic wiring covers and wiring insulation.

Evidence Collected:

No evidence was collected.

Interviews

The driver of the LLV indicated that he smelled something burning while he was driving on his route. He pulled over and lifted the hood on the LLV and observed fire at the right rear corner of the engine compartment. He then called 911 to report the fire. The LLV had just come out of the vehicle maintenance facility on the day of the fire after having the transmission replaced.

Service Records:

A review of the service records provided for the involved LLV did not reveal any recent repairs or work that would have caused or contributed to the cause of the fire. The last preventative maintenance was reported to be February, 2019.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to

us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Van D. Tuley

Van D. Tuley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1

Front view of the vehicle.



Photograph 2

Right side (driver's side) of the vehicle.



Photograph 3

Left side (mail side) of the vehicle.



Photograph 4

Dashboard and driver's area of the vehicle.



Photograph 5

Cargo area of the vehicle.



Photograph 6

Engine compartment.



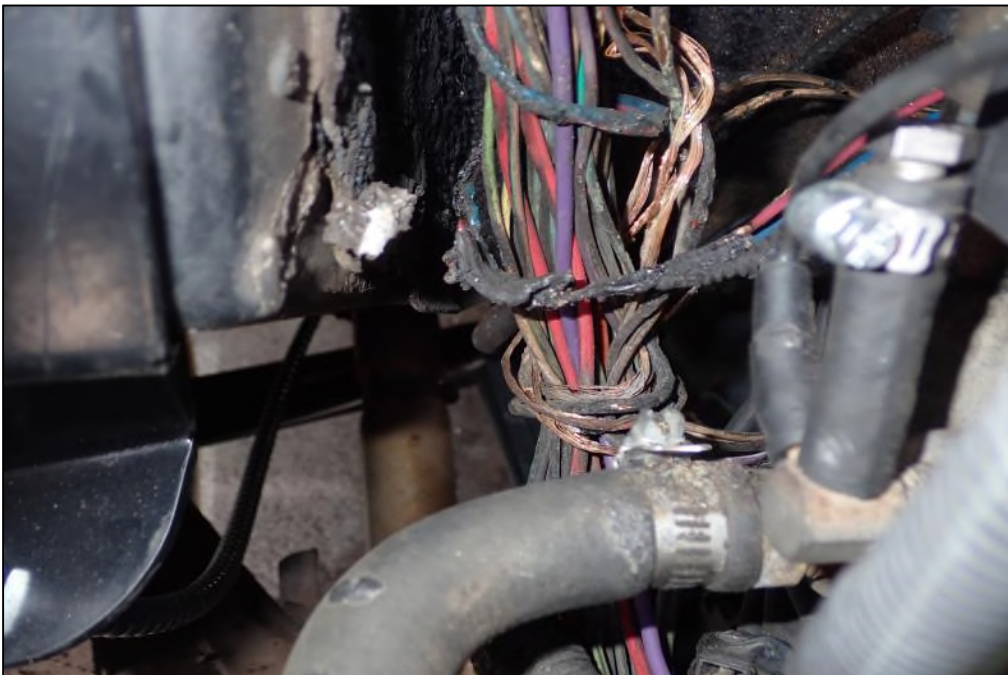
Photograph 7

Fire damage to the wiring harnesses at the upper portion of the bulkhead.



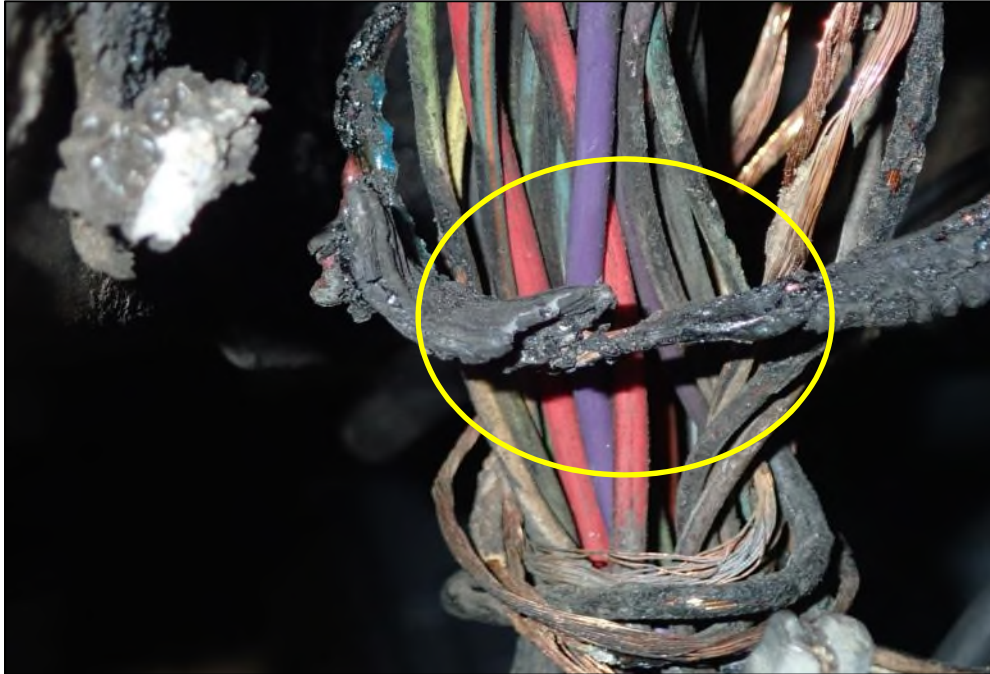
Photograph 8

Fire damage to the wiring harness behind the right side of the engine.

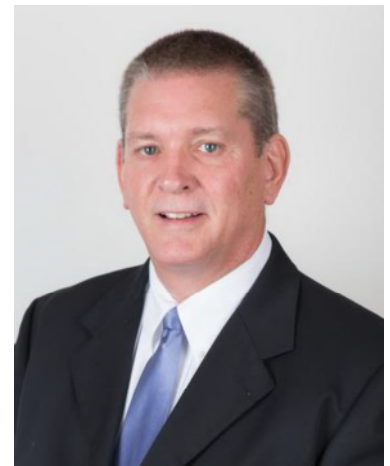


Photograph 9

Fire damage to the wiring for the fuel injector.



Curriculum Vitae



Van D. Tuley, IAAI-CFI

Fire Consultant

Fire Division/Charlotte District

Background

Mr. Tuley attended the University of Evansville, where he earned his M.S. degree in Criminal Justice and his B.S. degree in Law Enforcement. Mr. Tuley has over 30 years of combined investigative experience as a police officer and detective for the Police Department in Portage, IN, and as a special agent with the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). He is a Certified Fire Investigator (CFI) through the International Association of Arson Investigators (IAAI) and a licensed private investigator in multiple states. In addition, he has testified as an expert witness in both federal and state court proceedings as well as depositions involving the investigation of fires.

Contact Information

(704) 896-6227

vdtuley@rimkus.com

5900 Harris Technology
Blvd., Suite P
Charlotte, NC
28269

As a forensic consultant, Mr. Tuley specializes in the determination of the origin and cause of fires and explosions involving residential and commercial structures, as well as cases involving motor vehicles and other conveyances. He also is responsible for coordinating logistics during multi-party examinations for large-loss investigations.

Prior to joining Rimkus, he worked with the ATF for over 24 years. During the last 15 years of his tenure he responded to approximately 500 fire scenes as an ATF-CFI, including residential and commercial structures. He was also a member of the ATF's National Response Team for approximately 16 years, responding to major fire and explosion losses throughout the U.S. as a Certified Explosives Specialist.

Throughout his career, Mr. Tuley has coordinated and instructed continuing education training seminars in fire investigation for state and local fire investigators and law enforcement personnel tasked with the investigation of fire and explosion incidents. To stay up-to-date on the latest developments in his fields of expertise, he is an active member of IAAI (the national organization as well as the North Carolina and South Carolina chapters).



Rimkus Consulting Group, Inc.
92 South Street
Hopkinton, Massachusetts 01748
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

June 8, 2018

Re: RCG File No: 44803735
LLV Number: 2213469
VMF Location: 85 Weston Street Hartford, Connecticut
Subject: Preliminary/Final Report

Dear

On April 13, 2018, a fire occurred in a US Postal Service vehicle in Suffield, Connecticut. Rimkus Consulting Group, Inc. was retained to examine the engine of the Grumman LLV 2213469. On May 1, 2018, we conducted an examination on the damaged engine at the Hartford VMF located at 85 Weston Street in Hartford, Connecticut.

In the course of our work, we interviewed the mail carrier, conducted a comprehensive examination of the engine and documented the damage with photographs. Our work to complete this assignment was performed by Fire Consultant Scott Popovich, IAAI-CFI (V). This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire & Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was at and around the exhaust manifold on the left side of engine where oil was sprayed on the exhaust when an internal component of the engine penetrated through the engine block.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of an internal component (piston rod) failure resulting in the penetration through the engine block causing a hole in the engine block which allowed ignitable engine fluids to be expelled onto the hot surface of the operating LLV and ignite.

Observations

Exterior Inspection:

The subject LLV was repaired and back in service at the time of our inspection. We did inspect the vehicle in service at its work location and we did not observe any evidence of fire damage to the vehicle.

Engine inspection:

The damaged engine was inspected at the Hartford VMF. It was crated and ready for shipment back to Jasper after being removed from the LLV the day after a small fire had occurred. The GM 2.5L engine was labeled with a Jasper sticker numbered 099514. The oil pan was observed to be damaged; a tear was located in the center side of the oil pan along with a seam that was opened and separated at the engine block. Pieces of the engine were dislodged and observed in the bottom of the oil pan. An oil sample was extracted from the pan for analysis.

Area of Fire Origin:

The fire originated in the engine compartment. According to the VMF supervisor, the only item that was fire damaged was a small plastic cover that the rear of the engine at the transition to the transmission.

Potential Contributing Factors:

Atomized oil from the failure point of the engine contacted hot surfaces of the engine and the exhaust system and briefly ignited.

Evidence Collected:

A sample of engine oil was extracted from the oil pan and sent for laboratory analysis. A lab report from Scientific and Forensic Testing Laboratories in Thorsby, Alabama is attached to this report.

Analysis:

The oil sample analysis indicated increased levels of iron and aluminum within the oil, indicating piston and cylinder wear within the engine block. Also, a light concentration of water was indicated.

Interview:

On May 1, 2018, an interview was conducted with the driver of the vehicle mail carrier she reported the following information: She is the regular driver; the LLV has been assigned to her since November 2017. There have been no issues with the LLV. Five minutes before the fire started, she texted a supervisor stating that the engine was working harder and louder than normal. She then heard a "pop" from the engine compartment. A passerby noticed flames and alerted her to get out of the vehicle because it was on fire. She saw smoke and fire from under the front of the vehicle. The passerby called 9-1-1 to alert the fire department. Fire and Police units arrived quickly and extinguished the flames.

Service Records:

A review of the service records was conducted. The vehicle was involved in accident in December 2017 doing damage to the right front fender, front-end assembly and windshield. The engine starter was replaced in December, 2017 as well. The last preventive maintenance was also completed in December, 2017. At which time several engine components were replaced.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Scott S. Popovich

Scott S. Popovich, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Oil Analysis Report, CVs

June 8, 2018
RCG File No. 44803735

Photograph 1

LLV as observed back in use at the post office.



Photograph 2

Engine being inspected.



June 8, 2018
RCG File No. 44803735

Photograph 3

Jasper identification.



Photograph 4

Separation from engine block.



Photograph 5

Tear in the oil pan from internal mechanical failure.



Photograph 6

Engine lubricant sample recovered from oil pan.



June 8, 2018
RCG File No. 44803735

Oil Analysis Report



FORENSIC
AND
SCIENTIFIC
TESTING, INC.

ISO 17025:2005 & FRA-1:2008/1 Accredited
Certified Laboratory Report

21 Industrial Dr.
Thorsby, AL 35171
Phone: 205-646-0071
E-Mail: swells@fast-lab.com

Page 1/1

Rimkus
Scott Popovich
92 South St.
Hopkinton, MA 01748

Date: May 16, 2018
D.O.L.: 4/13/18
Date Collected: 5/1/18

Insured:
Claim #: 2ASPER15C0087

FAST, Inc. Case #: FRM-5-60999

Investigator: Scott Popovich
Investigator Case # 44803735
Exam request: Fluid Evaluation

Evidence Delivered on: 5/8/18
Delivery Method: UPS

ITEMS

1. Plastic container listed as containing engine oil sample

METHOD

Item 1 was subjected to atomic emission and wet chemical examination.

RESULTS AND INTERPRETATIONS

Examination of atomic emission and wet chemical findings for Item 1 indicate increased levels of iron and aluminum indicating piston and cylinder wear. It should be noted, Item 1 contained a light concentration of water; however the test for glycol was negative, indicating the water is probably due to suppression efforts.



Sharee B. Wells, MS, F-ABC
Forensic Scientist

June 8, 2018
RCG File No. 44803735

CVs



SCOTT S. POPOVICH, CFPS, CFEI, CVFI, FIT FIRE CONSULTANT

Mr. Popovich's professional career includes 25 years with the Woonsocket Fire Department in the city of Woonsocket, RI. In that capacity he has been involved in many different emergency services including Deputy Director of Emergency Management, Assistant Fire Marshal, Lieutenant and Firefighter. As a licensed state of Rhode Island Assistant Deputy State Fire Marshal his duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Popovich has a Master of Science in Fire and Arson Investigation from the University of New Haven with a heavy concentration in forensics and a Bachelor of Science in Public Administration from Roger Williams University. He maintains certifications as a fire investigator and fire inspector and has attended numerous classes at the National Fire Academy and the Rhode Island State Crime Laboratory.

Mr. Popovich was recently recognized for project development for the planning and execution of Emergency Response Training for CVS Corporate Headquarters in Woonsocket, Rhode Island.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

M.S. – Fire and Arson Investigation – University of New Haven, Connecticut
B.S. – Public Administration – Roger Williams University, Rhode Island
A.S. – Fire Science – Community College of Rhode Island

Licenses and Certifications

Fire Investigative Technician (FIT) by the International Association of Arson Investigators
Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) by the National Association of Fire Investigators
Certified Fire Protection Specialist (CFPS) by the National Fire Protection Association
Certified Fire Inspector (CFI) by the National Fire Protection Association
Certified Evidence Collection Technician (ECT) by the International Association of Arson Investigators
Licensed Emergency Medical Technician by the State of Rhode Island
Licensed Oil Heat Technician
Licensed Hoisting Equipment Operator by the State of Rhode Island
Licensed Private Detective in the State of Rhode Island

Professional Memberships

IAAI (International Association of Arson Investigators)
RIIAAI (Rhode Island Chapter of International Association of Arson Investigators) Board Member



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
13900 Alton Parkway, Suite 123
Irvine, California 92618
Telephone: (877) 978-2044
Certificate of Authorization No. 44071

July 18, 2019

Re: RCG File No: 100006394
LLV Number: 2213773
VMF Location: 7001 S. Central Ave. Los Angeles, California
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was retained to determine the origin and cause of a fire incident that occurred on June 13, 2019, involving US Postal Service vehicle LLV 2213773, VIN 1GBCS10A1P2901824. The vehicle was identified as a 1992 Chevrolet, 3-door cargo style van manufactured at the Moraine, Ohio plant operated by General Motors, Inc. The vehicle was a rear-wheel drive, postal service delivery vehicle powered by an L4, 2.5 Liter gasoline engine with an automatic transmission, hydraulic brakes, and throttle body fuel injection (TBI). The last preventative maintenance inspection was completed on April 3, 2019. The last documented repairs were completed on June 10, 2019.

The vehicle fire incident occurred at 5951 Carmelita Street in Huntington Park, California. The driver at the time of the incident was USPS employee Efraim Maguella. The vehicle was examined at the Postal Facility located at 7001 S. Central Avenue in Los Angeles, California. The vehicle had been moved to the western parking area of the Vehicle Maintenance Facility (VMF).

Our work to complete this assignment was conducted by Fire Consultant Mark S. Fields, IAAI-CFI, on June 24, 2019. During our investigation of the fire, we conducted an examination of the fire damaged vehicle and documented the vehicle with digital photographs. A technical review of this report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During the work, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standards for Professional Qualifications for Fire Investigator."

Conclusions

1. The vehicle sustained moderate fire damage to the interior compartment from a fire originating within the dashboard area.
2. Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the interior compartment of the vehicle. The area of origin was determined to be on the right driver's side of the dashboard. The area of origin was within the right lower area of the dashboard. A specific area of origin was the male and female portions of the starter module/relay mounted under the dashboard and to the left of the fuse panel. The male portion of this module was not inside the passenger compartment and could not be located.
3. The specific ignition sequence and cause of the fire could not be conclusively determined. The most probable cause of the fire was due to moisture intrusion into the module halves, causing an adverse electrical event (resistive heating, arcing, etc.). This could also occur if the two halves of the module partially separated. The recent installation of two brand new starters is also a contributing factor regarding a potential, long term failure of the module components.

Observations

Exterior Inspection:

In order to consider the origin and all possible fire causes, the vehicle was examined from the areas that were least damaged to those most severely damaged with considerations of fire dynamics, ventilation, fire load, and other contributing factors.

Initial inspection of the exterior revealed that the vehicle doors were locked; the hood was ajar, and a large pink cloth towel was hanging over the side view mirrors mounted on the left front fender area.

There was no visible, physical evidence of body damage that would indicate this vehicle was involved in a recent collision. There were no license plates mounted on the vehicle.

The vehicle was equipped with four rims and tires. The wheels and tires on the vehicle at the time of fire appeared to meet manufacturer's specifications for the vehicle. The tires were manufactured by the Goodyear Tire Company. There was a minor lubricant leak visible on the axle hub of the left front wheel assembly.

The fuel door was observed with no fire damage, and the fuel cap was intact. The filler neck appeared tight and intact.

The exterior of the vehicle revealed no visible fire or heat damage to the hood, front fenders, passenger doors and panels, rear door and frame areas, or windshield.

Interior Inspection:

Examination of the rear cargo area revealed the door was locked and no visible fire or heat related damage was present. This area was empty at the time of the examination.

Examination of the interior compartment revealed a noticeable odor of combustion similar to burned plastics. Also revealed during examination was a minor deposition of smoke/soot on the exterior of the lower right corner of the instrument display panel. There was also a minimal amount of fire debris on the floorboard under this area. There was no other visible fire or heat damage to the seats, dash board, driver service table, or other interior surfaces.

Ordinary personal belongings (hat, ear buds) were observed on the table (hat), and floorboard behind the driver's seat.

Also visible on the mail service table were eight blade type, micro-2 and ATO fuses identified as having been removed from the fuse box located at the right, interior corner of this compartment. These were identified as 2 X 20-amp fuses (yellow); 2 X 15-amp fuses (blue); 2 X 10-amp fuses (red); 1 X 25-amp fuse (clear); and 1 X 5-amp fuse (amber). Visual inspection of these fuses revealed no fire or heat related damage or separation of the metal links within each fuse.

Engine Compartment Inspection:

Examination of the engine compartment revealed the battery cables had been disconnected from the battery located in the left side of this compartment. The cables and battery revealed no visible evidence of adverse electrical activity or physical damage.

There was no visible heat or fire related damage to any portion of the engine compartment. There were visible layers of dirt and carbon on the interior surfaces of the hood and engine compartment. These layers were attributed to normal operation of the vehicle.

All belts and hoses were attached and revealed no visible evidence of fire or heat related damage. There was no visible evidence of cracking, rubbing, splitting, or other abrading damage from operation.

The oil dipstick was removed, and the oil level evaluated. Based on the observed level it appeared that the oil level was within normal volume according to the manufacturer's recommendations. An examination of the oil filter and oil filter gasket revealed no visible damage or leaks. The oil filter appeared to have been recently installed.

The starter unit located on the bottom of the engine appeared to be recently installed. Inspection of this component revealed no visible damage. This item, and the oil filter, were confirmed as being installed between 04-03-19 and 06-10-19 as part of preventative maintenance and documented repairs.

Undercarriage Inspection:

An examination of the undercarriage revealed no fire, heat, soot, or smoke related damage to any portion of the undercarriage. Due to these observations, the possibility of a fire originating beneath the vehicle was eliminated.

Fuse Panel Inspection:

An examination of the fuse panel revealed six blade fuses mounted within various locations of the fuse box. The fuse box cover was not inside the vehicle and could not be located. There was visible evidence of corrosion on many of the empty fuse positions but no visible, related evidence of fire or heat damage within any fuse position. There was no visible damage due to adverse electrical activity. There was minor smoke, soot, and heat related damage to the upper left corner and left side exteriors of the fuse panel. This corresponded to an area of origin to the left of the fuse panel (see paragraph "Area of Fire Origin").

Behind the fuse panel, on the interior surface of the fire wall, was an intermittent soot and smoke staining pattern. This pattern was disturbed by a pattern of small, oval shaped areas consistent with a liquid being introduced to the smoke/soot layer in the later stages of the fire incident. It was reported the water was used by the carrier driving the vehicle to extinguish the fire; more water was used by the supervisor when a subsequent, secondary fire incident occurred in her presence. Fuses were removed during the subsequent fire by the responding supervisor, Ms. Lupe Cruz.

Area of Fire Origin:

The area of origin was within the right lower area of the dashboard within the passenger compartment. A specific area of origin was the male and female portions of the starter module/relay mounted under the dashboard and to the left of the fuse panel. The male portion of this module was not inside the interior compartment and could not be located. Digital images were made available of this missing portion of the module/relay by USPS supervisor Donald M. Pedro, Jr.

The female portion of this module revealed visible fire damage, charring, and loss of mass with a small “V” pattern on one side. The connector areas within this portion of the module were also fire damaged with varying intensities of damage and charring. A green collar or “ring” had corresponding damage to a portion where the “V” pattern was observed along with corresponding fire damage. This damage most probably occurred due to moisture intrusion into the module halves, causing an adverse electrical event (resistive heating, arcing, etc.). This could also occur if the two halves of the module partially separated. The recent installation of two brand new starter relays is also a contributing factor regarding a potential, long term failure of the module components.

A red insulated circuit wire was physically contacting the remains of the module. There was corresponding fire and heat damage to the insulation. One end of this wire was connected to the hazard light switch on the upper right interior of the dash panel; the other end was connected to a wiring harness that extended behind the fuse panel.

Potential Contributing Factors:

There were potential contributing factors to this fire incident.

One factor related to repeated reports of persistent leaks around the lower portion of the front windshield. These leaks allowed moisture or a measurable volume of liquid to contact wiring harnesses inside and under the dashboard. The introduction of liquids (water) into energized harnesses/circuits will cause an adverse electrical event.

A second factor related to the mounting of the starter module relay within the dashboard or the engine compartment. In conversations with Mr. Pedro or VMF supervisor Michael Chavez, past repairs have shown that modules mounted sideways are exposed to the previously listed moisture or liquid intrusion; modules mounted vertically (female end up) create a barrier that prevents moisture or water intrusion.

Evidence Collected:

Potential items of evidence were collected during the examination. The fuses located on the driver table were collected as Item #1.

The remains of the female end of the starter relay module, located under the right-side area of the dashboard was collected as Item #2. The male end was removed by USPS personnel and could not be located on the day of the examination.

A red-colored insulation wire with corresponding damage, and physically contacting the starter relay module, was collected as Item #3.

All items of potential evidence were secured after collection and packaging. They were shipped via USPS to the Charlotte, North Carolina office of Rimkus Consulting Group, Inc. on June 27, 2019, for possible future examination.

Interviews:

The vehicle fire incident occurred at 5951 Carmelita Street in Huntington Park, California. The driver at the time of the incident was USPS employee. He reported initially observing smoke emitting from the dashboard area.

Service Records:

A review of the service records provided for the LLV did reveal recent repairs that may have caused or contributed to the cause of the fire including the recent installation of two brand new starter relays. The last preventative maintenance was reported to be April 14, 2019.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Mark S. Fields

Mark S. Fields, IAAI-CFI, NAFI-CFEI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Eastern Division Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1

Looking southwest, showing front, right side, and pink towel over mirrors.



Photograph 2

Looking north, showing right side of vehicle, rear, and part of roof.



Photograph 3

Looking east, into rear storage area of vehicle.



Photograph 4

Looking north, into driver compartment of vehicle.



Photograph 5

Looking west, into engine compartment.



Photograph 6

Looking west and downward; new starter installed several days before fire.



Photograph 7

Looking west, undercarriage of vehicle.



Photograph 8

Looking north, pulled fuses from fuse box (located on driver's table).



Photograph 9

Looking east and inside, interior of right side of dashboard (oval is spatter pattern; arrow is fire damaged module and wire).



Photograph 10

Looking into dashboard, showing damaged starter relay module and wire.



Curriculum Vitae



Mark S. Fields, CFI, CFEI

Fire Consultant
Fire Division

Background

Mr. Fields is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and Certified Fire and Explosion Investigator (NAFI-CFEI) with the National Association of Fire Investigators.

He received a national certificate from the U.S. Army Weapons Intelligence Course. He also received a state certificate in Crime Scene Technology from the Virginia Forensic Science Academy. Mr. Fields has personally worked over 300 fire and explosion investigations.

Mr. Fields has acted as an expert witness in traditional forensic topics.

His forensic experience includes investigations of fire and explosion incidents in industrial, commercial, residential structures, vehicles, and boats/vessels. His areas of expertise include fire scene analysis, evidence/data collection, post-blast investigations, investigative interviews, scene photography, and evidence facility management.

Professional Engagements

- Fire/Bomb Investigations
 - Forward Deployed Laboratory – Afghanistan (2011), As photographer and forensic processing technician, processed evidence in post-blast investigations/IED incidents for fingerprints, DNA, and trace evidence. Photographed viable latent prints and other evidence for identification purposes. Worked with Explosive Ordinance Disposal (EOD) from U. S. Army, U.S. Navy, and foreign military units. Trained in facial recognition, iris recognition, and latent print examination on cases with trained personnel.
 - Fire Origin and Cause – Charlottesville, VA (1992-2010), Responsible for the determination of the origin and cause of 100+ fires, both incendiary and accidental, working with fire marshals from Albemarle County, City of Charlottesville, Virginia State Police, and U.S. Department of Treasury Bureau of Alcohol, Tobacco, and Firearms agents.
- Education/Training
 - Mobile Training Team (MTT) – U.S. military installations (2010-2013), Instructed U.S military students throughout various military installations about best practices and techniques in forensic investigations

Contact Information

(714) 954-1912

mfields@rimkus.com

13900 Alton Parkway, Suite
123
Irvine, CA 92618

including forensic photography techniques, known/latent print impression collection, DNA collection, report writing, intelligence/evidence collection, and improvised explosive device (IED) components/post blast investigations. Techniques relied on actual IED components and devices (minus the explosives) during instruction. When working as an instructor for The Weapons Intelligence Course (WIC), the team blew up at least two cars a class, military munitions in ground-based detonations, and completed post-blast investigations on the cars.

- Expert Witness Testimony
 - Charlottesville, VA (2009), Circuit Court: Commonwealth V Shifflett, Sexual Assault, (Qualified as Expert in Forensics)
 - Charlottesville, VA (2009), 14th Street NW & Wertland Street apartment fire (arson involving pyrotechnics, improvised explosive devices), Deposition for civil trial.

Forensic Engagements

- Fire Origin and Cause
 - West Covina, CA (2019), Investigated residential fire. Determined specific ignition sequence and cause of the fire to be the result of an unspecified failure of the electrical system involving an open/floating neutral within the ungrounded, 110 V electrical system. Electrical energy contacted wooden framing members in the attic area, causing low temperature heating until ignition temperatures were reached and the fire spread to surrounding combustible materials.
 - Inglewood, CA (2019), Residential fire that originated at or near floor level, several feet inside the garage space, and near the west wall interior. It extended near a framed doorway and continued toward the south wall. Several potential ignition sources were identified in the garage including: open flame ignition devices, careless disposal of smoking materials inside the space due to recent living activity, accidental ignition of combustible materials related to recent drug use, resistance heating of electrical extension cords that extended from an adjacent garage space (“piggy backing of power”), and an incendiary fire with human involvement.

Professional Experience

- Rimkus Consulting Group, Inc. 2019 – Present
 - Fire Consultant – Fire Division
Conduct fire and explosion investigations in industrial, commercial and residential structures, vehicles, and boats/vessels. Assess potential for possible subrogation or liability concerns. Fire scene analysis, evidence and data collection, monitoring of destructive and nondestructive testing. Conduct investigative interviews and scene photography. Prepare detailed reports pertaining to the origin and cause of fire or explosion events.
- Unified Investigations & Sciences 2016 – 2019
 - Fire Investigator
Conducted fire and explosion investigations related to industrial, commercial and residential structures,

vehicles, and boats/vessels. During investigations, has assisted clients with assessing the potential for possible subrogation. Completed fire scene analysis, evidence and data collection, conducted investigative interviews and scene photography/documentation. Prepared detailed reports pertaining to the origin and cause of fire or explosion events. Additional responsibilities included management of southern California evidence facility, related record keeping and data entry.

- General Dynamics Information Technology 2013 - 2016
 - Senior Forensic Training Specialist
Assigned to training teams that instructed foreign and U.S. military students related to U.S. Army doctrine. Completed team leader, assistant team leader, and facilitator assignments with students during assigned classes. Instructed and tested students in forensic and biometric topics (DNA, photography, fingerprint processing/collection, materials collection/IED introduction, post-blast investigation, documentation/chain of custody, and processing of cell phones, computers, and other media sources for intelligence using designated software and hardware packages). Instruction consisted of classroom and multiple practical exercises. Completed Certified Computer Forensic Examiner (CCFE) course as part of instructor assignment for Weapons Intelligence Course. Maintained course material for site exploitation, report writing, and cell phone/computer blocks of instruction. Completed Master Instructor level through U.S. Army Instructor Curriculum.
- Six 3 Systems, Inc. 2010 – 2013
 - Senior Instructor/Forensic Technician/Photographer
Assigned to Mobile Training Team (MTT) for instructing U.S military students throughout various military installations. Instructed and tested students in photography techniques, known/latent print impression collection, DNA collection, report writing, intelligence/evidence collection, and improvised explosive device (IED) components/post blast investigations. Trained with Weapons Intelligence Course personnel on specified trainings. Completed new lesson plans and maintained other documentation related to training missions. Completed monthly, quarterly, and annual training reports. Completed deployment to Afghanistan during 2011 as photographer and forensic processing technician in a forward deployed laboratory.
- Charlottesville Police Dept. 1992 – 2010
 - Forensic Unit Detective/Police Officer
Assigned as Forensic Unit detective in 2001. Investigated and reviewed all death cases; involved in all major crimes/traffic incident scenes. Processed evidence “in house” on cases as requested for fingerprints, DNA, and trace evidence. Involved in quarterly, annual evidence/property audits and completion of related reports. Proficient in the use of interview and interrogation techniques, crime scene preservation, crime scene search techniques, evidence collection and packaging, report generation (oral and written), crime scene photography, search and seizure laws, expert courtroom testimonial procedures, forensic procedures, and crime scene diagramming. Responsible for the determination of the origin and cause of 100+ fires, both incendiary and accidental, working with city, state and federal agencies. Assisted the City of Charlottesville Commonwealth Attorney’s office in the prosecution of

criminal offenses, including those involving fire and/or arson. Graduate of the Virginia Forensic Science Academy in November 2006. Additional training in forensic anthropology/covert burial investigations.

As a uniformed police officer, was assigned to a patrol sector on evening and daylight patrol shifts. Initiated or responded to traffic accidents/criminal calls for service. Issued traffic summonses, criminal summonses, or completed arrests in more serious traffic and criminal incidents. Additional responsibilities include Field Training Instructor (FTI) with new officer recruits and police academy graduates. Selected as a patrol evidence technician that responded to crime scenes, serious vehicle accidents, and industrial accidents. Trained in interview and interrogation techniques, crime scene preservation, crime scene search techniques, evidence collection and packaging, report generation, crime scene photography, search and seizure laws, forensic procedures (blood detection, shooting scene reconstruction, etc.) and crime scene sketching.

Education and Certifications

- Certified Fire Investigator: International Association of Arson Investigators (IAAI)
- Certified Fire and Explosion Investigator (CFEI): National Association of Fire Investigators
- Virginia Forensic Science Academy (2006)
- Master Instructor: U.S. Army Instructor Curriculum
- California Conference of Arson Investigators
- Virginia Forensic Science Academy Alumni Association

Continuing Education

- CFITrainer.net
 - Fundamentals of Residential Building Construction, April 2019, 3 hours (tested)
 - The Scientific Method for Fire & Explosion Investigation, Feb. 2018, 3 hours (tested)
 - Preparation for the Marine Fire Scene, Nov. 2017, 4 hours (tested)
 - Fire Protection Systems, Nov. 2017, 3 hours (tested)
 - National Fire Protection Association 921 & National Fire Protection Association (NFPA) 1033, 2014 Edition- Application of Important Revisions, Nov. 2017, 3 hours (tested)
 - Evidence Examination - What Happens at the Lab, Nov. 2017, 4 hours
 - Fire Chemistry, November 2017, 3 hours (tested)
 - Writing the Initial Cause & Origin Report, Nov. 2017, 3 hours (tested)
 - Ethics and the Fire Investigator, Nov. 2017, 3 hours (tested)
 - NFPA 1033 and Your Career, Nov. 2017, 2 hours (tested)
 - The Practical Relationship Between NFPA 1033 and NFPA 921, 2 hours (tested)
 - Introduction to Evidence, Sept. 2017, 4 hours (tested)
 - Investigating Motor Vehicle Fires, April 2016, 4 hours (tested)
 - The Impact of Ventilation in Building Structures on Fire Development, April 2016, 4 hours (tested)
 - Fundamental of Interviewing, March 2016, 4 hours (tested)

- Critical Thinking Solves Cases, March 2016, 4 hours (tested)
- Physical Evidence & the Fire Scene, Feb. 2016, 4 hours (tested)
- Residential Electrical Systems, Feb. 2016, 4 hours (tested)
- Electrical Safety, Feb. 2016, 3 hours (tested)
- Insurance and the Fire Investigation, Feb. 2016, 4 hours (tested)
- Using Resources to Validate Your Hypothesis, Jan. 2016, 2 hours (tested)
- Basic Electricity, Jan. 2016, 4 hours (tested)
- Accreditation, Certification, and Certificates, Jan. 2016, 3 hours (tested)
- Documenting the Event, Jan. 2016, 4 hours (tested)
- Using Resources to Validate Your Hypothesis, Jan. 2016, 2 hours (tested)
- Vacant and Abandoned Buildings: Hazards and Solutions, Jan. 2016, 4 hours (tested)
- Introduction to Fire Dynamics and Modeling, Oct. 2015, 4 hours (tested)
- Explosion Dynamics, April 2013, 4 hours (tested)
- DNA Evidence, Feb. 2013, 3 hours (tested)
- Digital Photography and the Fire Investigator, Dec. 2012, 4 hours (tested)
- Potential Value of Electronic Evidence in Fire Investigations, March 2012, 4 hours (tested)
- Arc Mapping Basics, Feb. 2012, 4 hours (tested)
- Wildland Fire Investigations, Feb. 2012, 5 hours (tested)
- Expert Witness Courtroom Testimony, IAAI, Texas Chapter, May 2018, 40 hours (tested)
- Electrical Aspects of Fire Investigation, San Diego Fire Department/IAAI, September 2017, 24 hours (tested)
- Asbestos Awareness Training, Occupational Safety & Health Administration (OSHA.gov), May 2017, 4 hours (tested)
- California Conference of Arson Investigators/San Diego Fire Department Seminar (Vehicle Fire Investigations), May 2016, 4 hours (tested)
- Unified Investigations & Sciences (UIS) New Employee Course (Insurance, Evidence Collection & Submission Procedures w/ Practical, Evidence Photography, Daubert Challenges, Report Writing), May 2016, 24 hours (tested)
- Asbestos Awareness Training, OSHA.gov, Feb. 2016, 4 hours (tested)
- National Association of Fire Investigators (NAFI/IAFI) – Spoliation, Dec. 2015, Spoliation, 2 hours (tested)
- United States Army
 - Weapons Intelligence Course – Vehicle Borne Improvised Explosive Devices (VBIED) & Post-Blast Investigations, Sept. 2015, 8 hours (tested)
 - Bioterrorism Preparedness, March 2015, 4 hours (tested)
 - Hazardous Materials/Explosives Recognition, Handling, and Transportation, July 2014, 8 hours (tested)
 - Suicide Bombers, April 2014, 4 hours (tested)
 - Introduction to Improvised Explosive Devices, Feb. 2014, 40 hours (tested)
- Western Forensic Law Enforcement Training Center (WFLETC), CBRNE for First Responders/Investigators, April 2013, 40 hours (tested)
- Sanfran-Morpho, Inc., What Makes an Expert Witness, April 2013, 2 Hours

- International Association of Arson Investigators (IAAI) - Virginia Chapter, Digital Photography and Crime Scene Documentation, March 2012, 4 hours (tested)
- Central Virginia Fire Marshals' Association (CVFMA)
 - Legal Updates and Fire Investigations, September 2010, 3 hours
 - Incident Response to Terrorist Bombings, July 2010, 4 hours



Rimkus Consulting Group, Inc.
5707 South Laburnum Avenue
Richmond, Virginia 23231
757-229-2226 Telephone
(888) 286-9943 Facsimile

May 22, 2018

Re: RCG File No: 47603286
LLV Number: 2213871
VMF Location: 1001 School Street Richmond, Virginia
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving 1992 LLV 2213871. This fire reportedly occurred on Chippingham Parkway in Richmond, Virginia, on April 23, 2018, at approximately 7:04 P.M. In the course of our work, we examined and documented the fire-damaged vehicle on May 2, 2018. The vehicle's VIN plate and vehicle number located on the exterior of the vehicle were destroyed by the fire.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 1001 School Street in Richmond, Virginia. The work to complete this assignment was performed by Fire Consultant William R. Clark, IAAI-CFI (V). A technical review of this report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach, as recommended in the current edition of National Fire Protection Association's NFPA-921, "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was at and around the exhaust manifold on the left side of engine where oil was sprayed on the exhaust when an engine rod penetrated through the engine block.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a thrown rod through the engine block causing a hole in the engine block which allowed ignitable engine fluids to be expelled onto the hot surface of the operating LLV and ignite.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. We observed extensive fire and heat damage to the exterior of the vehicle with the greatest degree of direct fire damage at the front engine compartment. The front body components had sustained extensive damage. The rear body components were identifiable with a lesser degree of fire and heat damage as compared to the front engine compartment.

Interior Inspection:

The interior of the vehicle had sustained extensive direct fire and heat damage with the rear of the vehicle sustaining a lesser degree of fire and heat damage as compared to the front passenger compartment of the vehicle. We observed combustible materials in the form of undelivered mail on the floor of the vehicle cargo compartment at the rear of the vehicle. The mail had sustained some fire damage but was still identifiable. The front driver's compartment of the vehicle had been consumed to near completion as a result of the fire. There was no physical evidence observed on the interior of the LLV that would have caused or contributed to the cause of the fire.

Engine Compartment Inspection:

The engine compartment had sustained significant direct fire and heat damage with the combustible components having been consumed to near completion. The metal components in the engine compartment had sustained a greater degree of fire and heat exposure on the driver's side as compared to the passenger side of the vehicle. The engine oil filter was examined. The filter was in place and tight. The transmission fluid dip stick was examined. The transmission contained fluid at an acceptable level within normal operating levels. There were no obvious electrical arc or failures identified that could have been causative of this fire.

An examination of the engine block was conducted. A large hole was observed on the left side of the engine block directly behind the exhaust manifold. The hole was parallel with the engine crank shaft and appeared to have been blown from the inside out by a piston rod failure. A large quantity of oil was observed on the back side of the exhaust manifold. Based on the fire patterns observed, the left side of the engine within the engine compartment was determined to be the area of origin.

Undercarriage Inspection:

We were unable to do a complete undercarriage examination of the vehicle for safety reasons. Loose components presented a drop hazard. The vehicle was lifted in order to view the components in a safe manner. The vehicle was on a GM frame and the GM fuel system was observed intact. From the areas of the undercarriage we were able to examine, the fire damage was consistent with a fire originating on the left front of the engine compartment.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage and mass loss. All fuses were damaged by the fire unable to be evaluated.

Area of Fire Origin:

Fire pattern analysis and witness observations indicated that the fire originated in the engine compartment on the mail side of the engine. Located on this side of the engine was a noticeable hole in the block, which was caused by an internal rod penetrating the engine block. The frame on the right side displayed oxidation which was created by the fire communicating to this area from the engine. The majority of the aluminum body was consumed on this side. Oil escaped from the opening in the engine block, which allowed oil to come in contact with the hot surfaces of the engine and exhaust, causing a fire.

Potential Contributing Factors:

The piston push rod for the first cylinder sustained a catastrophic failure and punctured the engine block allowing engine oil to be expelled onto the hot surfaces of the exhaust manifold. The engine oil then ignited. The fire spread to surrounding combustible components. The age of the engine or low oil level/pressure may have also been a contributing factor.

Evidence Collected:

No evidence was collected.

Interview:

The operator of the vehicle, was interviewed on the phone May 1, 2018. He stated that he started driving the vehicle at 11:00 A.M. and finished at 6:45 P.M.; he had had no issues with the vehicle. This was the first time he had driven this particular vehicle, because when he came into work, someone had already taken his vehicle. He did not put gas in the vehicle. While driving, he heard a noise and he thought a tire had blown. He looked out the window and saw fire coming from the exhaust pipe. He pulled over, and a passing motorist stopped who had a fire extinguisher and attempted to put the fire out. There was gas dripping from the vehicle. None of the dash lights illuminated while he was driving. He had no problems with the vehicle until the fire occurred. The Chesterfield County Fire Department responded.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

RIMKUS CONSULTING GROUP, INC.

William R. Clark

William R. Clark, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CV

May 22, 2018
RCG File No. 47603286

Photograph 1

View of the front of the vehicle.



Photograph 2

View of the driver's side of the vehicle.



May 22, 2018
RCG File No. 47603286

Photograph 3

View of the back of the vehicle.



Photograph 4

View of the mail side of the vehicle.



May 22, 2018
RCG File No. 47603286

Photograph 5

View of the dash area.



Photograph 6

View of the dash area.



May 22, 2018
RCG File No. 47603286

Photograph 7
View of the engine.



Photograph 8
View of the oxidation on the frame on the mail side of the vehicle.



Photograph 9

View of hole in engine block.



Photograph 10

Close-up view of the hole in the engine block.



May 22, 2018
RCG File No. 47603286

Photograph 11

View of oil level on dip stick.



Photograph 12

View of the undercarriage of the vehicle.



May 22, 2018
RCG File No. 47603286

CVs



**William “Bill” Clark, IAAI-CFI, CFEI, CVFI
Fire Consultant**

Mr. Clark is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (VACFI) with the Virginia Department of Fire Programs. Mr. Clark is a Registered Private Investigator with the Virginia Department of Criminal Justice Services.

Mr. Clark has conducted over 900 fire/explosions investigations as a law enforcement officer and private fire investigator. These fire/explosion investigations have involved commercial & residential structures, as well as heavy equipment and vehicles. Mr. Clark has extensive experience investigating fires involving injury and death. Mr. Clark has also conducted investigations involving hazardous materials. Mr. Clark has instructed firefighters, police, and military in fire investigation procedures, death investigations, evidence collection, homemade explosives, and post blast investigations, weapons of mass destruction & clandestine lab recognition and safety.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Tidewater Community College, Virginia Beach, VA
Associates in Fire Science, 12 Credit Hours

Virginia Department of Fire Programs
Firefighter 1, 2, & 3, 1987

Virginia Department of Criminal Justice Academy, Petersburg, VA
Police Academy, 1989

National Fire Academy, Emmetsburg, MD
Fire/Arson Investigation Course, 1996

Virginia Department of Forensic Sciences, Lynchburg, VA
Death Investigation, 2000

Greater Cincinnati Regional Arson and Fire Investigation Association
Fire Investigation, 2003

North Carolina/South Carolina International Association of Arson Investigators Fire Investigation Seminar, 2015

Virginia State Police, Richmond, VA
Vehicle Theft Investigation, 2003

Virginia Chapter of the International Association of Arson Investigators
Electrical Fire Investigation, 2000
Fire Investigation, 2001
Small Appliance Fire Investigation 2001
Fire Investigation, 2003
Fatal Fire Investigation, 2004
Fire Investigation, 2008
Meeting the 1033/921 Challenge, 2013

William “Bill” Clark, IAAI-CFI, CFEI, CVFI

Bureau of Alcohol, Tobacco, Firearms, & Explosives, Richmond, VA
Post Blast Investigation, 2004

Virginia Department of Fire Programs, Norfolk, VA
Environmental Crimes Investigations, 2005
Arson Scene Evidence Processing, 2009

Central Shenandoah Criminal Justice Training Academy, Weyers Cave, VA
Crime Scene Investigations Course, 2005

Central Virginia Criminal Justice Academy, Lynchburg, VA
Reid Interviewing Techniques, 2006
Reid Interview Advanced Techniques, 2007

Public Agency Training Council
Vehicle Fire Investigation Course, 2006
Arson Evidence Collection Course, 2007
Arson for Profit Course, 2009

Federal Emergency Management Agency, Anniston, AL
Hazardous Materials Technician, 2008

Zero Point, Virginia Beach, VA
Advanced Homemade Explosives, 2012

Safety Unlimited
HAZWOPER Training & Certification, 2014

Member of: National Association of Fire Investigators
 International Association of Bomb Technicians & Investigators
 International Association of Arson Investigators
 Virginia Chapter – International Association of Arson Investigators

EMPLOYMENT HISTORY

2014 to Present	Rimkus Consulting Group, Inc.
2006 to 2014	Fire Technology Consultants, LLC (Part Time)
2009 to 2012	Joint Improvised Explosive Device Defeat Organization (MPRI Contractor)
2004 to 2009	Albemarle County Fire Marshal's Office
2003	Donan Engineering Company
2001 to 2006	Danielson Investigative Services (Part Time)
2001 to 2006	Fire Analysis Consulting Group (Part Time)
1998 to 2003	Amherst County Sheriff's Office
1989 to 1998	City of Franklin Police Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
5099 Commercial Circle, Suite 100
Concord, CA 94520
(925) 677-7439 Telephone
(925) 677-7445 Facsimile

August 3, 2017

Re: RCG File No:

	01906261
LLV Number:	2214555
VMF location:	1900 E Street in Fresno, California
Subject:	Preliminary/Final Report

Dear

On July 12, 2017, a fire occurred in a US Postal Service vehicle in Madera, California. On July 21, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1992 Grumman LLV 2214555. On July 24, 2017, we conducted a fire origin and cause examination on the vehicle at the US Postal Service Maintenance Facility located at 1900 E Street in Fresno, California.

In the course of our work, we interviewed the vehicle maintenance staff and reviewed the statement of the carrier, examined the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Jimmie McCants, NAFI - CFEI. A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the vehicle.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of an engine fluid leak (IE: fuel, oil, transmission fluid) onto a hot engine surface as the possible cause of the fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed in the engine compartment and the carrier's compartment. Severe fire damage was observed to the windshield, engine hood assembly, dashboard and multiple engine components. There was no evidence to indicate that the LLV had recently been involved in a collision.

The front of the vehicle had sustained severe fire damage. The cover for the engine compartment had been consumed by the fire. The bulkhead between the engine compartment and the mail side compartment had also been consumed. Severe fire damage was observed to the left, mail side of the vehicle. Both front fenders had been consumed. The left side mail door and aluminum frame had partially melted. Severe fire damage was also observed to the upper portion of the cargo area. The rear rolling door had sustained heat damage. The front area of the aluminum roof of the vehicle had melted as the result of thermal exposure from the fire.

The exhaust system was undamaged by the fire. The rear wheels, brakes, brake lines and tires were undamaged. The rear axle was not leaking or damaged. The transmission was undamaged. The fuel lines were intact along the left frame. The flexible fuel lines at the cross over to the right side above the transmission had sustained severe fire damage.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage throughout. All combustible seating material had been consumed, exposing the metal seat frame. The

steering column and brake pedal assembly had been severely fire damaged. The mail tray had collapsed and partially melted. Numerous packages of paper products remained with charring around the edges. The rear cargo area sustained fire, heat and smoke damage throughout. The front bulkhead had been consumed. The fuse block located on the right side of the driver's compartment had fallen into the engine compartment and was too severely damaged by the fire to be evaluated. There was no evidence of adverse electrical activity. The ignition was too severely damaged to be evaluated.

The fire progressed from the engine compartment and into the interior. The burn patterns were far more severe from the front of the LLV toward the rear of the LLV.

Engine Compartment Inspection:

Examination of the engine compartment revealed severe fire damage throughout the compartment. The vehicle was equipped with a GM 2.2L, four-cylinder, gasoline engine. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the engine.

The fire damage was far more severe on the left side of the engine compartment than the right. In that area we found the fuel lines that ran along the frame then were connected by rubber lines and up to the fuel injection throttle body. The rubber lines were damaged by the fire and no longer connected the lines together.

We were able to check the oil level in the engine and found it was full according to the dip stick. We examined the engine block, pan and oil filters, we found no damage to any of these items and were able to rule out catastrophic engine failure.

We were unable to check the fluid level in the transmission as the dip stick had melted and was no longer visible. The transmission pan did not reveal any damage or major leaks.

Undercarriage Inspection:

Examination of the rear undercarriage revealed evidence of soot, smoke, heat, and fire damage. The front-end of the undercarriage was observed with severe fire damage. There was an accumulation of oil residue observed throughout the undercarriage area. The undercarriage in the area of the engine sustained severe fire damage. There was an accumulation of oil residue present. The involved LLV was mounted on a GM frame. The fuel lines were positioned within the open frame routed to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. The fuel lines were routed above the transmission to the right side of the engine and observed with severe fire damage. The rubber sections of the fuel lines at the transmission were damaged and observed with mass loss.

Fuse Panel Inspection:

Examination of the fuse panel revealed severe fire damage to the panel and wiring insulation, and only the wiring conductors were present during our examination. Examination of the conductors and fittings, did not reveal any adverse electrical activity on any of the conductors.

Interviews:

It was reported by the carrier that she was delivering mail and heard a “pop” in the engine compartment, pulled the vehicle over to the side of the road, and observed “smoke” within the engine compartment coming from the right side of the hood area. She reported that she notified the Postmaster and backed away from the vehicle due to the intense fire. She reported that she had no issues with the vehicle prior to the fire.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated within the engine compartment of the vehicle. The area of origin was determined to be on the left side of the engine. The specific point of origin could not be conclusively identified due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination. We could not eliminate the possibility of an engine fluid leak (IE: fuel, oil, power steering fluid, transmission fluid, etc.) onto a hot engine surface as the possible cause of the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. On February 3, 2017, a service was conducted that included the preventive maintenance. On April 25, 2017, the power steering pump, battery, front wheel bearing, exhaust manifold, muffler, and a power steering hose were replaced. It was also documented that the power steering lines, transmission lines, and front seals and bearings were leaking.

After a review of the service records, it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire

originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Evidence Collected:

We did not collect any evidence from the LLV.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,

RIMKUS CONSULTING GROUP, INC.

Jimmie L. McCants

Jimmie L. McCants II, NAFI - CFEI
Fire Consultant

David R. Meyers

David R. Meyers
Technical Fire Manager

Attachments: Photographs, CVs

August 3, 2017
RCG File No. 01906261

Photograph 1
Right side of LLV.



Photograph 2
Left side of LLV.



August 3, 2017
RCG File No. 01906261

Photograph 3
Fuel lines at engine.



Photograph 4
Fuel lines from frame to engine.



August 3, 2017
RCG File No. 01906261

CVs



**JIMMIE McCANTS, IAAI, CFEI
FIRE CONSULTANT**

Mr. McCants is a Certified Fire and Explosion Investigator and a licensed private investigator in California. With 22 years of fire investigation experience and 26 years of law enforcement experience he is uniquely qualified to work the most complex fire losses. He has investigated over 1,000 fires during his long career. He was assigned as a lead investigator for a multi-county fire investigation unit in California. Mr. McCants has investigated several fatal fires as well as numerous high profile fires and bombing incidents throughout northern California. He is well versed in taking statements and in the warning signs of arson and possible insurance fraud cases.

As a prior detective Mr. McCants is well versed in collecting and preserving evidence. His structural fire and explosion experience on scene for various types of occupancies has given him working knowledge of building construction, fire behavior, and post investigation techniques for analyzing damage assessment and fire cause and origin.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire and Explosion Investigator, National Association of Fire Investigators 2012
Certified Arson / Explosive Investigator, Robert Pressley Institute of Criminal Investigations 1999
Associates of Sciences degree Solano Community College, 2000

EMPLOYMENT HISTORY

2013 – Present	Rimkus Consulting Group, Inc.
2011 – 2013	G4S Compliance and Investigations, part-time fire investigator
1985 – 2011	Solano County Sheriff's Office



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
13900 Alton Parkway, Suite 123
Irvine, CA 92618
Telephone: (714) 954-1912

February 24, 2020

Re: RCG File No: 100025553
LLV Number: 2215757
VMF Location: 7001 S. Central Avenue Los Angeles, California 90052
Subject: Preliminary/Final Report

Ms.

On January 27, 2020, a fire occurred involving USPS LLV 2215757. The loss location was reported to be 510 S. Lucerne Boulevard in Los Angeles, California. LLV 2215757 was examined at the VMF located at 7001 S. Central Avenue in Los Angeles, California.

Rimkus Consulting Group, Inc. was retained to examine the 1993 LLV 2215757 with VIN 1GBCS10A7P2903822 to determine the cause of the fire. During our investigation we conducted an examination of the fire damaged LLV, reviewed provided statements of carrier/driver and documented the vehicle with photographs. In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI (V), on January 31, 2020. This report and case were reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the left/rear section of the engine compartment.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of either: A fuel leak at the high-pressure fuel line connection to the fuel filter inlet side where the threaded connection was found to be loose; or close proximity of the high-pressure flexible fuel line to the engine exhaust header. Fuel/vapor was ignited by one of several nearby sources including the exhaust header, catalytic converter, or alternator.

Observations

Exterior Inspection:

The hood was melted from fire heat at the left rear section. The front bumper and grill were intact. The left front fender received fire heat effects above the front tire, with heat patterns traveling upward to the driver compartment. The left side was intact rearward to the rear of the LLV. There were no fire effects to the rear of the LLV except soot to the rear roll-up cargo door. The right rear was intact. The right door was open at the time of the fire with fire damage to the upper front edge that was exposed to the driver compartment. The front right quadrant sustained fire effects to the upper half, diminishing to the front of the hood.

Interior Inspection:

The cargo compartment was primarily intact, sustaining heat and smoke damage, which entered at the front access opening which was compromised by fire.

Engine Compartment Inspection:

The engine compartment sustained localized severe fire effects to the left rear side of the compartment. Fire effects diminished from this location toward the front and right side. The vehicle was equipped with a 2.5 liter engine with a standard ignition coil.

Undercarriage Inspection:

The undercarriage remained intact except below the left rear area of the engine compartment.

Fuse Panel Inspection:

The fuse panel was consumed by the fire impinging on the panel.

Area of Fire Origin:

The fire originated in the engine compartment, left/rear section.

Potential Contributing Factors:

Loose connection of the high-pressure fuel line where it was adjoined to the inlet side of the fuel filter, or the close proximity of the flexible high-pressure fuel line to the engine exhaust header may have contributed to the cause of the fire.

High-pressure connection fitting was easily disconnected by hand indicating it was loose prior to the fire and may have contributed to the fuel leak and cause of the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. The records were very limited in scope, with only periodic routine PM servicing of the LLV.

(Note: VMF Supervisor Don Pedro stated the LLV technician who normally serviced the subject LLV was no longer employed with the USPS due to lack of attention to vehicle issues and workmanship.)

Evidence Collected:

No evidence was collected.

Interview:

Ms. carrier/driver, United States Postal Service, was not interviewed due to being on leave during our investigation. However, her written statements were consistent with the findings herein.

The carrier was driving vehicle 2215757 on the 500 block of Lucerne when she noticed the smell of smoke. The carrier pulled over to investigate the source of the smell. The smell dissipated so the carrier began driving again. When the carrier arrived at their next stop, the smell was strong again so the carrier then called the supervisor. The carrier told their supervisor about the problem and asked if they should return to the station. The carrier offered to bring the vehicle back to the station at the end of the swing. When the carrier returned to the vehicle they noticed white smoke coming from the vents. The carrier immediately called the supervisor back and the supervisor instructed the carrier to remove everything from the truck and get to a safe place. After the call, the carrier went to the back of the truck to remove the mail and then went to the front to retrieve her belongings. At the front of the vehicle, the carrier observed a fire by the window. The carrier again called the supervisor to inform him that the vehicle was on fire. The supervisor then instructed the carrier to move to a safe place and call 911. The carrier called 911 and the fire department responded to extinguish the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A Lowe, IAAI-CFI(V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

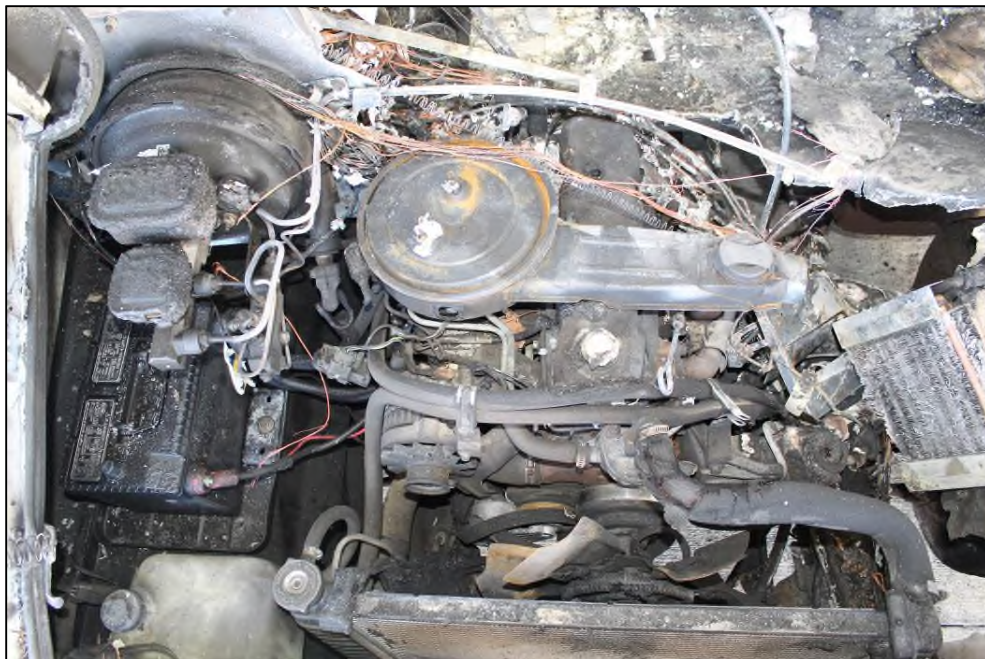
Attachments: Photographs, Curriculum Vitae

February 24, 2020
Rimkus File No. 100025553

Photograph 1
Subject LLV.

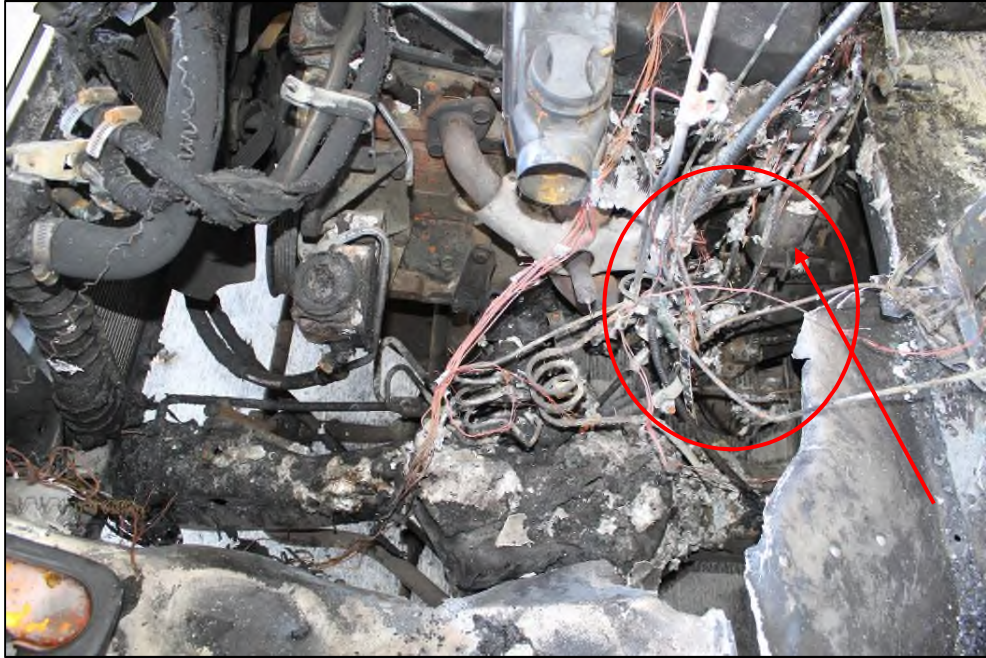


Photograph 2
Engine compartment. Note battery and components intact, right.



Photograph 3

Engine compartment. Area of origin, red circle. Fuel filter, red arrow.



Photograph 4

The high pressure fuel line section from origin area indicated pressurized failure.



Photograph 5

Fuel filter top, center. Pen indicates location of loose high-pressure connection.



Photograph 6

High-pressure connection easily disconnected by hand.



February 24, 2020
Rinkus File No. 100025553

Curriculum Vitae



David A. Lowe, CFI

Fire Consultant
Fire Division

Background

Mr. Lowe is a Certified Fire Investigator with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services. He is also FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 28 years of experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land.

Investigations and consultations, conservatively estimated at over 2,250, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otay, Mexico and Taber, Alberta, Canada.

Contact Information

(657)-229-9952

dlowe@rimkus.com

13900 Alton Parkway,
Suite 123
Irvine, CA 92618



Rimkus Consulting Group, Inc.
1661 East Camelback Road, Suite 124
Phoenix, Arizona 85016
(866) 552-6758 Telephone
(602) 216-2201 Facsimile

February 6, 2019

Re: RCG File No: 01709352
LLV Number: 2216211
VMF Location: 4949 E. Van Buren Street Phoenix, Arizona
Subject: Preliminary/Final Report

Dear

On December 28, 2018, a fire occurred involving a US Postal Service LLV 2216211. The loss location was reported to be 24640 N. Lake Pleasant Parkway in Peoria, Arizona. LLV 2216211, a 1992 Grumman mail delivery vehicle, VIN 1GBCS10A8P2904302 was examined at the VMF located 4949 E. Van Buren Street located in Phoenix, Arizona.

In the course of our work, the vehicle examination was conducted by Thomas D. Kane, IAAI-CFI, Fire Consultant, on January 3, 2019. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver and documented the vehicle with photographs. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment in the area of the bulkhead on the left (mail) side of the vehicle.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a leak in the fuel injector throttle body and the atomized gasoline vapor coming in contact with a competent ignition source, in the immediate vicinity of the fuel lines or a hot surface ignition of the accumulation of engine fluids within the engine compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. We observed that most of the vehicle structure on the passenger compartment had been consumed by fire. We observed the bulkhead of the vehicle sustained substantial fire damage near the center of the vehicle. A directional burn pattern was observed on the engine compartment hood. We observed mass loss of the hood on the mail side of the vehicle. There was no evidence to indicate that the LLV had recently been involved in a collision.

At the time of the exam, we observed one of the LLV tires was in the doorway on the mail side of the vehicle. The tire was damaged by fire and had been located at the mail side front. The tire was replaced so the vehicle could be moved. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. Both front doors had been consumed by fire. The cargo door was locked in the closed position. We observed fire damage to the exterior side of the cargo door indicating that it was open at the time of the fire.

Interior Inspection:

The interior cargo/mail area sustained minor to moderate fire, smoke and soot damage. Fire patterns indicated the fire melted the aluminum panel between the operator's and cargo compartment. Moderate smoke and soot damage was observed along the ceiling

and upper side walls of the cargo space. Fire debris from the operator's compartment was observed on the floor of the cargo compartment.

The interior compartment sustained severe fire and heat damage. Most of the combustible materials located within this area were consumed by the fire, including the fuse panel and various electrical conductors in the dashboard area on the driver's side. Fire patterns indicated this was the result of the fire's extension from the engine compartment near the bulkhead/dashboard on the mail side. The most severe damage was observed on the mail side of the compartment, where the bulkhead had completely burned through from the direction of the engine compartment. The bulkhead was mostly intact on the driver's side.

The bundled wiring harnesses on the driver's side connecting from the fuse panel towards the Engine Control Module (ECM) sustained severe fire damage. The ECM had been positioned in the center of the dash and was observed with severe fire damage. The burn through hole in the bulkhead was observed to the left of the ECM. The remnants of an electric fan was found in the fire debris along the burned through area of the bulkhead.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was a reconditioned, Jasper 2.5L with fuel injection and a standard ignition coil. The engine compartment was observed with moderate to severe fire damage. The driver's side contained the brakes master cylinder, battery, alternator, rubber and plastic components and the majority of the electrical conductors within the compartment. The ignition coil and fuel lines were also on this side. However, this side of the compartment sustained less severe fire damage than the mail side.

Fire patterns indicated that the moderate damage to the front of the engine compartment, including the radiator, fan blades, pulleys and hoses were caused by radiated heat originating from the center and bulkhead area of the mail side. No evidence was observed of the fire originating within the brakes, wheel hubs or tires extending into the area of the engine compartment.

The majority of damage to the engine compartment occurred on the mail side between the rear of the engine block and along the bulkhead/dashboard. Fire patterns indicated this was the area of origin. Various conductors and switches connecting to the mail side headlights, flashers, heater and fan blower motor were located in this area and were

observed with severe fire damage. The spark plugs, plug wires and rubber boots were located a little further towards the front of the engine compartment and were intact, except the plug wires had apparently been consumed by the fire. The fuel lines came up along the rear of the engine and turned to the driver's side of the engine compartment. The fuel lines were observed with severe fire damage and mass loss in this area. Fire patterns indicated the fire originated further to the mail side along the bulkhead where they extended into the mail side of the operator's compartment.

The battery for the vehicle was located at the front driver's side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be severely damaged by fire attached however intact; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle, except for a limited area below the rear of the engine compartment that appears to have been caused by drop down from above. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head. All four tires were intact.

Fuse Panel Inspection:

The fuse panel positioned behind the instrument panel in the dashboard on the driver's side sustained severe fire damage. However, no evidence of adverse electrical activity was noted. The respective wiring harness associated with the fuse panel was inspected and did not reveal any unexpected damages from a fire with this intensity.

Area of Fire Origin:

The area of origin was determined to be the rear of the engine compartment, along the bulkhead/dashboard on the mail side of the engine. Various electrical conductors in bundled harnesses were observed near this area with all of the insulation burned off.

Some of the bundled harnesses came through the bulkhead from inside and under the dashboard. The electrical conductors could not be examined more closely due to the mass loss to the components, however no adverse electrical activity was observed to the remaining conductors. Electrical components in this area were the conductors and switches for the mails side headlights, flashers, heater and fan blower motor.

The remaining fire patterns indicated that the point of fire origin was in the area where rubber fuel line connections were located adjacent to the engine exhaust manifold. The rubber fuel lines had been consumed by the fire.

Potential Contributing Factors:

Based on the observed fire patterns, the most likely cause for this fire was a small fuel leak that caused pressurized gasoline to spray onto the hot surface of the engine exhaust manifold. This resulted in the ignition of the gasoline and the subsequent fire spread to nearby combustible materials.

Evidence Collected:

No evidence was collected.

Service Records:

A review of the provided service records for the involved LLV was conducted. Per maintenance records, this engine was installed on November 14, 2018. The last preventive maintenance was completed in December of 2018. There were indications of recent service and repairs that may have caused or contributed to the cause of the fire.

Witness Statement:

The driver was identified and he was interviewed by telephone. He stated that this was not normally his assigned vehicle and there were no vehicle performance issues prior to the fire. He was on his normal delivery route and traveling southbound on Lake Pleasant Parkway. He had been driving the vehicle for approximately four hours prior to the fire. The engine began to "sputter" and he saw smoke coming from the engine compartment. He pulled over at 24640 N. Lake Pleasant Parkway and called his supervisor to report the problem. He then saw flames coming from the engine compartment and called 911. The Peoria Fire Department (PFD) was nearby and responded within a few minutes. PFD did not conduct an origin and cause investigation.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Thomas D. Kane

Thomas D. Kane, IAAI-CFI, CFIV
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

February 6, 2019
RCG File No. 01709352

Photograph 1
USPS LLV 2216211.



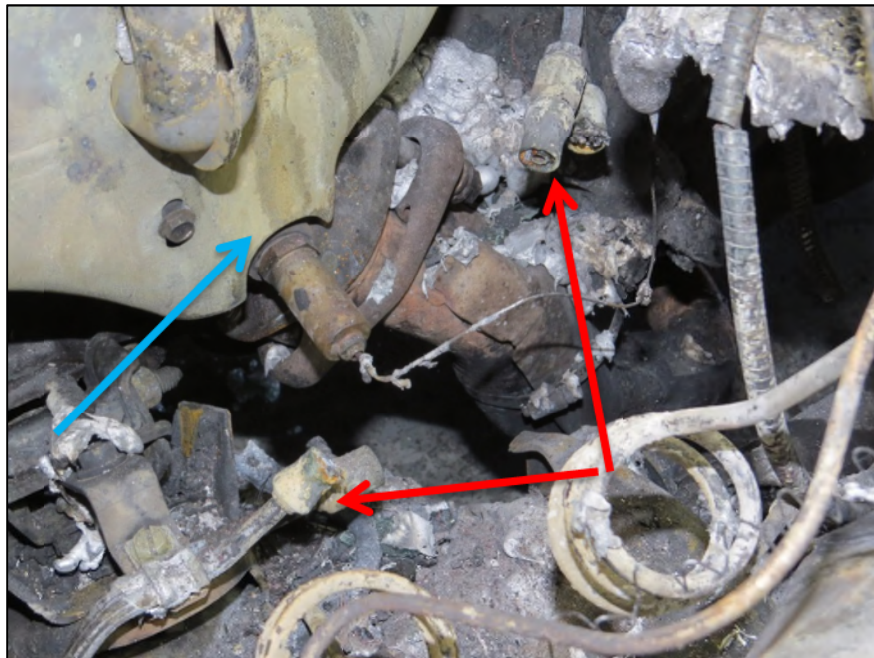
Photograph 2
Front of the vehicle.



Photograph 3
Engine compartment.



Photograph 4
Fuel line (red) adjacent to exhaust manifold (blue), rubber section missing.



February 6, 2019
RCG File No. 01709352

Photograph 5

Interior area, fire progressed from the mail side of the engine compartment.



Photograph 6

View of cargo area.



February 6, 2019
RCG File No. 01709352

Curriculum Vitae



**THOMAS D. KANE, I.A.A.I.-C.F.I., P.I.
FIRE CONSULTANT**

Mr. Kane specializes in fire origin and cause investigation, and consultation. Mr. Kane has over twenty-five years of experience in law enforcement with half of his career as an Arson Detective. Mr. Kane has investigated and determined the cause and origin of over one thousand fires occurring in commercial structures, residential homes, recreational vehicles, automobiles, and wild lands. Mr. Kane has been recognized as an expert witness in both criminal and civil court, in the fields of fire cause and origin, building construction, criminal investigations, firearms, transient criminal groups, and issues relating to building safety and security.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

State University of New York, College at Buffalo, Bachelor of Science, Criminal Justice.
City of New York, Police Academy, New York City Police Officer certification.
Suffolk County, New York, Police Academy, New York State Police Officer certification.
Phoenix Regional Police Academy, Arizona Police Officer certification.
International Association of Arson Investigators, Certified Fire Investigator, #28-036.
International Association of Arson Investigators, member since 2002.
International Association of Arson Investigators, Arizona Chapter, member since 2000.
Maricopa County Fire Investigation Task Force, member since 2000
FBI Joint Terrorism Task Force on Arson, formed to apprehend the "Phoenix Mountain Preserve Arsonist," in 2000.
National Association of Bunco Investigators, member since 1999.
Licensed Contractor, Arizona Registrar of Contractors, since 2000.
Licensed Private Investigator, Arizona Department of Public Safety, since 2004.
Licensed Private Investigator, New Mexico PI Board, since 2014.

Mr. Kane has over seven hundred hours of classroom and practical instruction in fire dynamics, arson, and general investigations. Classes have included interviews and interrogations, covert surveillance technology, fire science, fire behavior, fire chemistry, hazardous materials, flammable liquids, fire origin and cause determination, electrical fire investigation, explosion scene investigation, and evidence collection and preservation. These are to mention only some of the areas in which formal training has been received.

EMPLOYMENT HISTORY

1988 - 1989	New York City Police Department (NYPD)
1989 - 1993	Suffolk County Police Department (SCPD)
2004 - 2006	Crawford Investigative Services, Fire Investigator
2006 - 2008	Jerry James and Associates, Fire Investigator
2008 - 2013	Fire Cause Analysis, Fire Investigator
1993 - Present	Scottsdale Police Department (SPD)
2004 - Present	Private, Certified Fire Investigator (IAAI)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus North Carolina, PLLC
5900 Harris Technology Blvd, Suite P
Charlotte, NC 28269
(704) 896-6227 Telephone
(704) 896-6228 Facsimile
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2017

January 19, 2017

Re: RCG File No:

LLV Number: 47200739
VMF Location: 2216633
3 Floretta Place in Raleigh, North Carolina
Subject: Preliminary/Final Report

Dear

Rimkus North Carolina, PLLC was retained to examine LLV 221663, VIN 1GBCS10A8P2904607. The vehicle was examined at the USPS Raleigh VMF located at 3 Floretta Place in Raleigh, North Carolina. The fire incident reportedly occurred on East Holding Avenue in Wake Forest, North Carolina on December 13, 2016.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on December 21, 2016. Our work to complete this assignment was performed by Fire Consultant David R. Meyers, IAAI-CFI. This report and case was reviewed by Technical Fire Manager Jack R. Kennedy III, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the interior operator compartment of the involved LLV.

2. The specific area of fire origin was determined to be at and around the headlamp switch positioned in the dashboard of the operator compartment.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of failure in the headlamp switch in the dashboard which heated to its ignition temperature and ignited surrounding combustible materials.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed in the engine compartment and the passenger compartment. Total mass loss was observed to the windshield, front right side of the vehicle, engine hood assembly, dashboard, and multiple engine components. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire. An analysis of the fire patterns present on the exterior of the vehicle indicated that the fire originated in the interior operator compartment and extended from there.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage to the operator compartment and smoke staining to the cargo area. Minor fire damage was observed in the cargo area. The most severe fire damage and mass loss was observed to the dashboard area, firewall, steering wheel assembly, and driver's seat. Based on the fire patterns observed, the dashboard area in front of the driver's seat behind the headlight switch assembly area was determined to be the area of origin.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine. Severe fire damage was observed throughout the engine compartment. The air filter cover and filter were examined and observed with severe fire damage. Electrical wires that transverse the area above the air filter and carburetor were damaged by fire and were thermally damaged, thus eliminating them as a cause. The fuel system was examined and found to be intact; however, it was observed with severe fire damage. The fuel filter was observed with severe fire damage; however, it

was observed intact and located along rear of the engine near the fire wall. The fuel filter system was the GM model.

The battery for the vehicle was located at the front right side of the engine compartment and had minor fire damage to the rear of the battery. The battery, the battery terminals and battery cables were examined and found to be damaged by thermal damage only, no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid, and brake fluid were examined and observed to be within their normal operating range; however, water did appear to be in the fluids. The carburetor was examined and observed with fire damage to the top portion of the carburetor where the air filter housing was mounted. The LLV was equipped with a High Energy Ignition (HEI) distributor.

An examination of the engine block was conducted. Severe fire damage was observed to the rear area of the engine in the area of the bulkhead. No internal failures of the engine were observed. Fire damage in the engine compartment was a result of fire extension from the operator compartment.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks or failures.

Fuse Panel Inspection:

Examination of the fuse panel revealed severe fire damage to the panel and all of the fuses, due to the severe fire damage we were not able to determine if any fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the passenger compartment on the right side of the dashboard at the headlight switch assembly.

Contributing Factors:

The LLV reportedly was being driven at the time of the fire and the carrier observed smoke coming from the dashboard area and from behind the headlight switch mounted

in the dashboard in front of the driver's seat. The vehicle was pulled to the side of the road when fire was observed coming from the dashboard behind the headlight switch.

The remains of the headlight switch assembly were found in the fire debris on the driver's side floorboard area and examined. Adverse electrical activity was observed to a terminal blade remaining on the switch and mounting bracket. Due to the severe fire damage it was unable to be determined which terminal blade the activity was on. The most severe fire damage observed to the dashboard area was observed in the area where the headlight switch was mounted.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

On December 21, 2016, an interview was conducted with the USPS VMF Supervisor at the Raleigh office. Mr. reported the following information:

- Mr. was called to the location for an LLV that had a fire in the passenger and engine compartment areas. He had the vehicle towed to the VMF in Raleigh, North Carolina.
- Mr. stated that they have had previous issues with the headlight switch in this vehicle and several others.
- Mr. stated that several headlight switches had issues if installed improperly.
- An examination of a headlight switch that was installed in this make/model was conducted. It was determined that when the wiring harness was installed, that if the ground terminal was not installed into the terminal properly, it could possibly create an adverse electrical event generating heat at the terminal that could potentially contribute to a fire in the dashboard.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no recent service or repairs noted that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NORTH CAROLINA, PLLC

David R. Meyers

David R. Meyers, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

January 19, 2017
RCG File No. 47200739

Photograph 1

The LLV fire on December 13, 2016 (Photo provided by USPS).



Photograph 2

LLV 2216633, VIN 1GBCS10A8P2904607.



January 19, 2017
RCG File No. 47200739

Photograph 3

Observe the severe fire damage to the driver's side dashboard area.



Photograph 4

Observe the less severe fire damage to the left side of the vehicle and the most severe to the driver's side dashboard area.



January 19, 2017
RCG File No. 47200739

Photograph 5

Observe minor fire damage only to the cargo area and no damage to the rear of the vehicle.



Photograph 6

Observe the severe fire damage to the rear area of the engine compartment and minor damage only to the battery area.



January 19, 2017
RCG File No. 47200739

Photograph 7

Observe the severe fire damage to the driver's side dashboard area.



Photograph 8

The area of the dashboard that the headlights switch assembly was mounted.



Photograph 9

Observe the area of the dashboard that the headlights switch assembly was mounted.



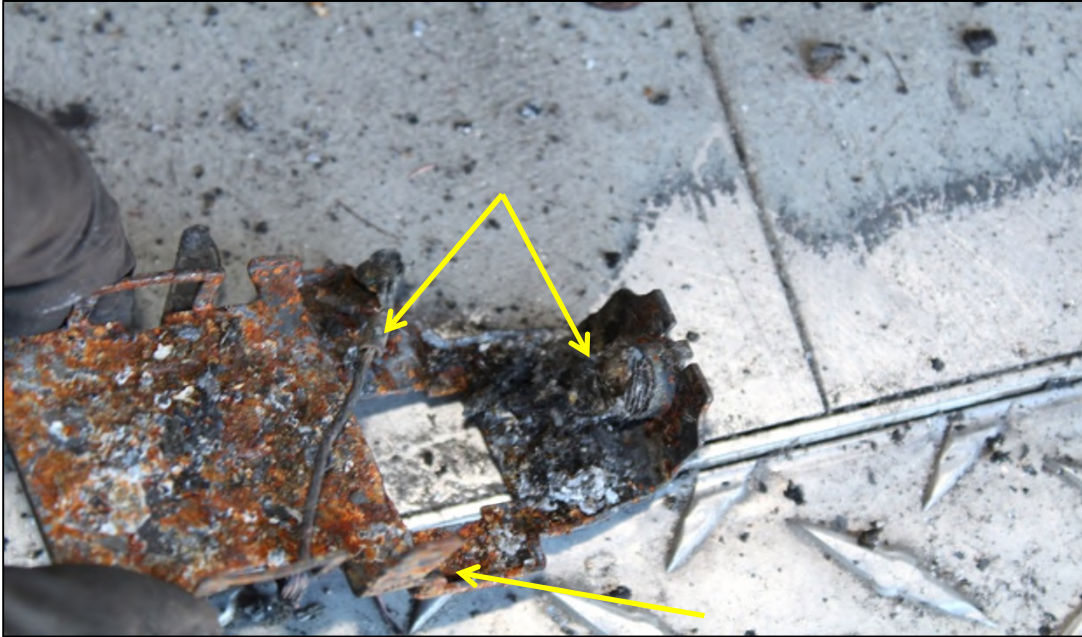
Photograph 10

The headlights switch assembly pieces remaining; observe the severe fire damage to the mount and the switch assembly.



Photograph 11

Observe the severe fire damage to the headlight switch assembly mount and the remaining wiring components.



Photograph 12

Observe the adverse electrical activity on the terminal end for the headlight switch.



January 19, 2017
RCG File No. 47200739

CVs



DAVID R. MEYERS, IAAI-CFI FIRE CONSULTANT

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Kaplan University,
Bachelors in Fire Science, Current Student (2015 Graduation)

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
100 West Big Beaver Blvd., Suite 200
Troy, Michigan 48084
(866) 240-0401 Telephone

March 1, 2018

Re: RCG File No: 53200034
LLV Number: 2217626
VMF Location: 310 West 11 Mile Road Royal Oak, Michigan
Subject: Preliminary/Final Report

Dear

A fire occurred on February 9, 2018, involving a postal vehicle in front of 15285 Samohin Drive in Macomb, Michigan. Rimkus Consulting Group, Inc. was retained to examine LLV 2217626, VIN, 1GBCS10A1P2905596. Our inspection of the vehicle occurred on February 22, 2018, at 310 West 11 Mile Road, Royal Oak, Michigan. The assignment was completed by Fire Consultant Kevin Cornell, IAAI-CFI. This report was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 – "Guide for Fire & Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the lower mail side of the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the bulkhead on the mail side underneath the engine compartment.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of combustible liquid coming in contact with a hot surface.

Observations

Exterior Inspection:

The grill had smoke staining. The hood had fire damage and there was a tear in the metal from the mail side to approximately the middle. The windshield was missing due to thermal damage. There was fire damage above the windshield. Above and to the front of the driver side door had smoke staining. The driver side front window was broken due to thermal damage. The mail side door had heat damage above the window. The windows were broken out due to thermal damage. The mail side front fender sustained fire damage. The front tire had minor fire damage.

Interior Inspection:

The cargo area sustained minor heat damage to the front wall. The driver's compartment sustained severe fire damage. The dashboard sustained severe fire damage. The firewall sustained severe fire damage. The contents sustained severe fire damage.

Engine Compartment Inspection:

The engine was a 2.5L fuel injection throttle body with a high output ignition coil. The driver's side sustained minor fire damage. The battery sustained minor fire damage. Plastic hoses and belts in the front of the compartment were intact. The components on the mail side sustained severe fire damage. The fuel lines were consumed by the fire. The mail side engine mount was observed with small cracks.

Undercarriage Inspection:

The front of the undercarriage sustained severe fire damage. There was evidence of flammable liquid that had sprayed onto the transmission housing. The exhaust pipe had sustained severe fire damage.

Fuse Panel Inspection:

The fuse panel sustained moderate fire damage. The wiring sustained minor fire damage.

Area of Fire Origin:

The area of origin is the mail side lower engine compartment.

Potential Contributing Factors:

A potential contributing factor could have been overheating the engine while attempting to remove the vehicle from being stuck in the snow.

Interview:

A written statement from the mail carrier was provided. The statement indicated that she had been stuck in the snow and was rocking the vehicle forward and backward in an attempt to free the vehicle. After multiple times of attempting to free the vehicle, she noticed smoke and exited the vehicle. Shortly after, a citizen informed her there was fire under the vehicle.

Evidence Collected:

No physical evidence was collected.

Service Records:

Service records were collected and are part of the file. Records indicated the last scheduled maintenance occurred on August 23, 2017. Service records indicated on December 6, 2017, the oil pressure sensor, fuel sender, and fuel pump had been serviced.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Kevin M. Cornell

Kevin M. Cornell, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

March 1, 2018
RCG File No. 53200034

Photograph 1
Front of the vehicle.



Photograph 2
Driver's compartment.



March 1, 2018
RCG File No. 53200034

Photograph 3

Top view of area of origin, mail side of engine compartment.



Photograph 4

Transmission housing.



March 1, 2018
RCG File No. 53200034

Photograph 5

Overall view of engine compartment.



Photograph 6

Overall front view of undercarriage.



March 1, 2018
RCG File No. 53200034

Photograph 7

View of area of origin from under the vehicle.



March 1, 2018
RCG File No. 53200034

CVs



KEVIN M. CORNELL, IAAI-CFI FIRE CONSULTANT

Mr. Cornell has over 20 years in firefighting, fire and arson investigation experience. He is a Certified Fire Investigator through the International Association of Arson Investigators as well as a Certified Fire Instructor through both the State of Michigan and National Fire Protection Association. He has completed numerous courses and seminars on fire investigation including several with the Michigan State Police Fire Marshal Division. Over his 20 plus year career has conducted fire and explosion investigations that include commercial, residential, and automotive.

Since 2008, Mr. Cornell has served as an instructor at the Washtenaw County Fire Academy teaching courses in fire investigation and evidence preservation.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Associate Degree – Applied Science with Honors, Washtenaw Community College
School of Fire Staff and Command, Eastern Michigan University
Police Reserve Academy, Washtenaw Community College
Member of: Metropolitan Detroit Fire Inspectors Society
Michigan Fire Inspectors Society
International Association of Arson Investigators – I.A.A.I. – Michigan Chapter

PROFESSIONAL CERTIFICATION AND LICENSES

Certified Fire Investigator (C.F.I.) – International Association of Arson Investigators
- Certificate Number: 05-122134
Fire Investigator - National Board on Fire Service Professional Qualifications
- Certificate Number: 202310
Certified Fire Instructor - State of Michigan
Certified Fire Inspector I - National Fire Protection Association (NFPA)
- Certificate Number: 12-0158
Certified Fire Inspector - State of Michigan
- Certificate Number: 12-654
Certified Plans Examiner - National Fire Protection Association (NFPA)
- Certificate Number: 14-0038
Emergency Medical Technician - State of Michigan
- License Number: 3203040275
Medical Instructor/Coordinator - State of Michigan
- License Number: 3205001886



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
14635 W. 95th Street
Lenexa, Kansas 66215
Telephone: (913) 904-5101

February 12, 2020

Re: RCG File No: 100023832
LLV Number: 2218109
VMF Location: Topeka: 400 West 1st Avenue Topeka, Kansas
Subject: Preliminary/Final Report

Dear

On January 4, 2020, a fire involving USPS LLV 2218109 reportedly occurred while being operated in Junction City, Kansas. The vehicle was manufactured by General Motors in 1992 and was a Grumman model LLV with VIN 1GBCS10A9P2905328.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Topeka VMF located at 400 West 1st Avenue in Topeka, Kansas. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on January 20, 2020. The vehicle examination was conducted by Fire Consultant Phillip A. Keena, IAAI-CFI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be in and around the flexible fuel lines routed and connected to ridged lines.
3. The specific ignition sequence and cause of the fire was determined to be the result of the flexible fuel line becoming split away from the connector to the ridged line and causing atomized gasoline to be sprayed and ignited on the hot surface of the operating engine components.

Observations

Exterior Inspection:

For the purpose of this report, the left side of the vehicle refers to the mail side and the right side refers to the driver's side. We observed heat and direct fire damage with mass loss to the front fender of the driver side and mail side of the LLV. We observed a greater degree of mass loss to the mail side fender. We observed radial patterns on both sides with the convex of the pattern towards the engine compartment. We observed a demarcation line in the damage patterns with the lowest point of the lines towards the engine compartment. An analysis of the fire dynamics and patterns indicated the fire originated in the engine compartment and extended out to the exterior of the vehicle.

There was no evidence to indicate that the vehicle had recently been involved in a collision. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

The interior of the LLV was examined. We observed smoke, heat, and direct fire damage to the cargo compartment with the greatest degree of smoke damage to the portion adjacent to the driver's compartment. All patterns indicated the fire travel was from the driver's compartment to the cargo compartment. We observed smoke, heat, and direct fire damage to the driver's compartment with the greatest degree of damage to the mail side of the compartment. All patterns indicated that the fire originated in the engine compartment and extended into the driver's compartment.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine with a carburetor and standard coil. Based upon an analysis of the fire dynamics, the fire damage, the fire movement and intensity patterns, and a systematic evaluation of the physical evidence, we determined the fire originated on the mail side of the engine compartment. We examined the mail side of the engine compartment.

We observed heat and direct fire damage with mass loss to metal components located on this side of the engine. We observed mass loss to the flexible fuel lines. We observed irregular shaped oxidation patterns to the chassis frame located below the area of the fuel lines. We observed the heat shield for the exhaust pipe coming out of the engine block was missing. We observed irregular shaped oxidation patterns to this section of the exhaust pipe. All patterns indicated that ignited fuel was running down the exhaust pipe and the frame. All patterns indicated that this was the area of origin.

The battery for the vehicle was examined. We observed heat damage with deformation to the top portion of the battery. We did not observe any evidence of an adverse event with the battery. The battery cables were examined and found to be intact with thermal damage only, no adverse electrical activity was observed. The battery and the battery cables were eliminated as a cause of the fire. The conductors for the alternator and starter were examined. We did not observe any evidence of an adverse electrical event to these conductors. The conductors for the alternator and starter were eliminated as a cause of the fire. The engine oil and transmission fluid were examined and observed to be within their normal operating range.

Based upon the fire damage, the fire movement and intensity patterns, and a systematic evaluation of the physical evidence, we determined the fire originated in the area of the flexible fuel lines located in the mail side of the engine compartment. This area contained the flexible fuel lines, rigid fuel lines, and their connections.

Undercarriage Inspection:

We did not observe any direct fire damage to the portion of undercarriage for the cargo compartment and driver compartment. We observed heat and direct fire damage to the portion of undercarriage from the engine compartment. All patterns indicated the fire travel was from the engine compartment to the undercarriage. The exhaust system was intact, and the transmission did not reveal any leaks or failures. The LLV was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel was positioned behind the instrument panel in the dashboard on the driver's side. We observed heat and direct fire damage to the back side of the fuse block adjacent to the fire wall. We observed the fuses were still intact. We performed a continuity test on the fuses and found several had "blown". We did not observe any evidence of an adverse electrical event. The respective wiring harness associated with the fuse panel was inspected and did not reveal any unexpected damage from a fire with this intensity.

Fire patterns indicated the damage to the fuse panel was due to the fire originating from the mail side of the engine compartment and extending into the driver's compartment.

Area of Fire Origin:

The area of fire origin was the location of the flexible fuel lines located in the mail side of the engine compartment.

Contributing Factors:

The LLV reportedly was being operated at the time of the fire and the carrier reportedly saw smoke coming from the engine compartment. The carrier stated the vehicle had good power and had no previous problems with the vehicle on the day of the fire. The heat shield over the exhaust pipe adjacent to the engine block was missing prior to the fire.

Evidence Collected:

No physical evidence was collected.

Interview:

The driver, Ms. , was interviewed over the phone. She stated she was driving the vehicle that day and it was operating normally. At approximately 1:50 P.M., she noticed the cab starting to fill up with smoke through the vents. She could smell rubber and plastic burning. She stated the headlights were on and the heater was off. This unit was typically operated out of Junction City. She had been operating it for two days prior to the fire. She did not open the hood when she noticed the smoke.

Service Records:

A review of the provided service records for the involved LLV was conducted. According to the maintenance records, besides regular vehicle maintenance, the vehicle had been serviced for several minor issues.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Phillip A. Keena

Phillip A. Keena, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

February 12, 2020
Rimkus File No. 100023832

Photograph 1

Front of the vehicle with heat and direct fire damage. All patterns indicated the fire originated in the engine compartment and extended out to the other areas of the vehicle.



Photograph 2

Driver side of the vehicle with smoke, heat, and direct fire damage. All patterns indicated the fire originated in the engine compartment and extended to the other areas of the vehicle.



February 12, 2020
Rinkus File No. 100023832

Photograph 3

Rear of the vehicle with smoke damage.



Photograph 4

Mail side of the vehicle with heat and direct fire damage. All patterns indicated the fire originated in the engine compartment and extend out to the exterior of the vehicle.



Photograph 5

Fuse block intact. Testing of fuses indicated that several were blown as a result of the fire.



Photograph 6

Driver side of the engine compartment with heat and direct fire damage. All patterns indicated the fire originated on the mail side and traveled to the driver side.



Photograph 7

Irregular shaped oxidation pattern on the frame of the vehicle. Pattern is indicative of fuel running down the frame.



Photograph 8

Undercarriage below area of origin with irregular shaped oxidation pattern on the frame.



Photograph 9

Area of origin was the mail side of the engine compartment where the flexible fuel lines make connection with the rigid fuel lines.



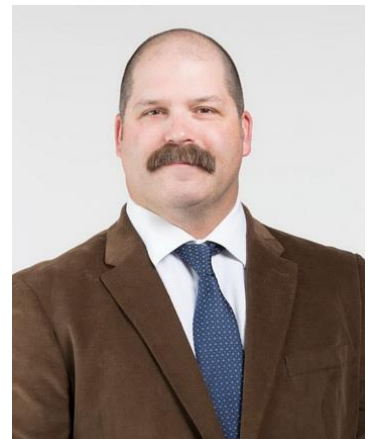
Photograph 10

Connection between flexible fuel line and rigid fuel line in the area of origin.



February 12, 2020
Rinkus File No. 100023832

Curriculum Vitae



Phillip A. Keena, IAAI-CFI

Fire Consultant
Fire Division

Background

Mr. Keena holds an A.A. in Fire Administration, a B.S. in Organizational Leadership, and an M.S. in Management. He is a Certified Fire Investigator through the IAAI, as well as in Missouri. He is also a licensed Private Fire Investigator in Illinois and Missouri. Mr. Keena also holds a Private Detective License in Iowa, Kansas, Montana, Nebraska, and Oklahoma.

As a firefighter for 25+ years, Mr. Keena has seen a wide range of fire, arson, and explosion scenarios. As a fire investigator, he has conducted origin and cause investigations on fatal structure fires, residential fires, commercial fires, and vehicle fires.

Mr. Keena is highly knowledgeable about fire suppression operations, technical rescue, hazardous materials incidents, building construction plans, and fire/explosion investigations. He also has an extensive knowledge in the residential construction industry due to his experience as a licensed contractor for 15+ years.

Contact Information

(913) 904-5101
pkeena@rimkus.com
14635 W. 95th Street
Lenexa, KS 66215

Professional Engagements

- Firefighter
 - Lawrence Fire Dept. – Lawrence, KS (1993-1996), As a member of the firefighting team, he was responsible for fire suppression and fire/non-fire response activities
 - Overland Park Fire Department – Overland Park, KS (1996-Present), As a member of the firefighting team, he is responsible for fire suppression and fire/non-fire response activities.
- Fire/Arson/Explosions
 - Investigator – Lenexa, KS (2012-2018), Investigated and analyzed cause and origin of damage. Collected, documented, and preserved evidence to ensure the chain of custody.



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road, Suite 224
Atlanta, Georgia 30339
(770) 436-9399 Telephone
(770) 438-2189 Facsimile

March 21, 2019

Re: RCG File No: 50809138
LLV Number: 2218245
VMF Location: 3900 Crown Road SE Atlanta, Georgia
Subject: Preliminary/Final Report

Dear

On February 21, 2019, a fire occurred in a US Postal Service vehicle near 536 W. Wesley Road NE in Atlanta, Georgia. On February 26, 2019, we inspected the 1993 Chevrolet LLV 2218245, VIN 1GBCS10A8P2906244, at the Atlanta Vehicle Maintenance Facility located at 3900 Crown Road SE in Atlanta, Georgia.

In the course of our work, we interviewed the carrier, inspected the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Gregory M. Cloer, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the driver's compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the rheostat headlamp switch positioned in the left side of the dashboard.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

Inspection of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side.

Movement and intensity fire movement patterns were observed on the front, sides, and the top of the vehicle indicating a fire originating in the passenger compartment. Most of the roof was consumed or melted during the fire event. There was no evidence to indicate that the LLV had recently been involved in a collision. Fire movement patterns on the outside of the vehicle indicated a fire originating at the operator's compartment of the vehicle.

Interior Inspection:

Inspection of the interior revealed the most severe fire damage had occurred in the dashboard area on the vehicle. The majority of the combustible materials in and around the dashboard area had been consumed during the fire event. The fire damage progressed from the interior to the cargo area of the LLV. Burned remains of the headlamp switch assembly were recovered from the floor of the vehicle.

Engine Compartment Inspection:

The engine compartment was inspected. The vehicle was equipped with a 2.5L engine. The vehicle was also equipped with a fuel injected throttle body and electronic ignition. Some thermal and fire damage was observed in the engine compartment. Most of the combustible materials within the engine compartment were observed mostly intact. The greatest degree of fire damage was observed at the rear of the engine compartment in the area of the bulkhead. The bulkhead between the passenger and engine compartment was observed mostly intact. The fuel system was examined and found to be intact and observed with no fire damage. The battery for the vehicle was located at the front right side of the engine compartment and was free of fire damage. The engine compartment electrical conductors were examined and found to be free of abnormal electrical events. The vehicle fluids were examined and were found to be within their respective operating range. The engine compartment was eliminated as an origin of the fire.

Undercarriage Inspection:

The undercarriage was examined. The involved LLV was mounted on a GM frame. The frame rail components were undamaged. The associated fuel lines and filter system were intact and free of damage. The undercarriage was eliminated as the origin of the fire.

Fuse Panel Inspection:

The fuse panel had sustained severe fire damage. All of the fuse panel combustible materials had been consumed during the fire. The electrical conductors and their connectors were observed with no adverse electrical event. The fuse panel was eliminated as the origin of the fire.

Area of Fire Origin:

Based on our observations and witness statements it was determined that the area of fire origin was in the driver's compartment on the left side of the steering column at the headlamp switch.

Potential Contributing Factors:

Issues with the headlamp switch in the area of origin could not be eliminated. The involved components were collected and sent to Technical Fire Manager David R. Meyers, IAAI-CFI in the Charlotte, North Carolina office for analysis.

Evidence Collected:

Item A – Headlamp Switch and pigtail

Item B – Fire debris from the floorboard area below the dashboard

Interview:

On March 4, 2019, an email was sent to Supervisor requesting the carrier, Ms. to call for an interview. An email was received from the USPS server indicating the email for Ms. was undeliverable and the email address could not be found. Attempts were made by telephone on March 5, 2019, to contact Ms. The telephone numbers called were 404-239-0894 and 404-239-0954. No one answered and there were no means of leaving a voice message for either number.

Service Records:

A review of the provided service records for the involved LLV was conducted. Per maintenance records, the battery cables were replaced in December 2018. The last preventive maintenance was completed in December 2018. There were no indications of recent service and repairs that may have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

March 21, 2019
RCG File No. 50809138

Photograph 1

View of the front and right side exterior.



Photograph 2

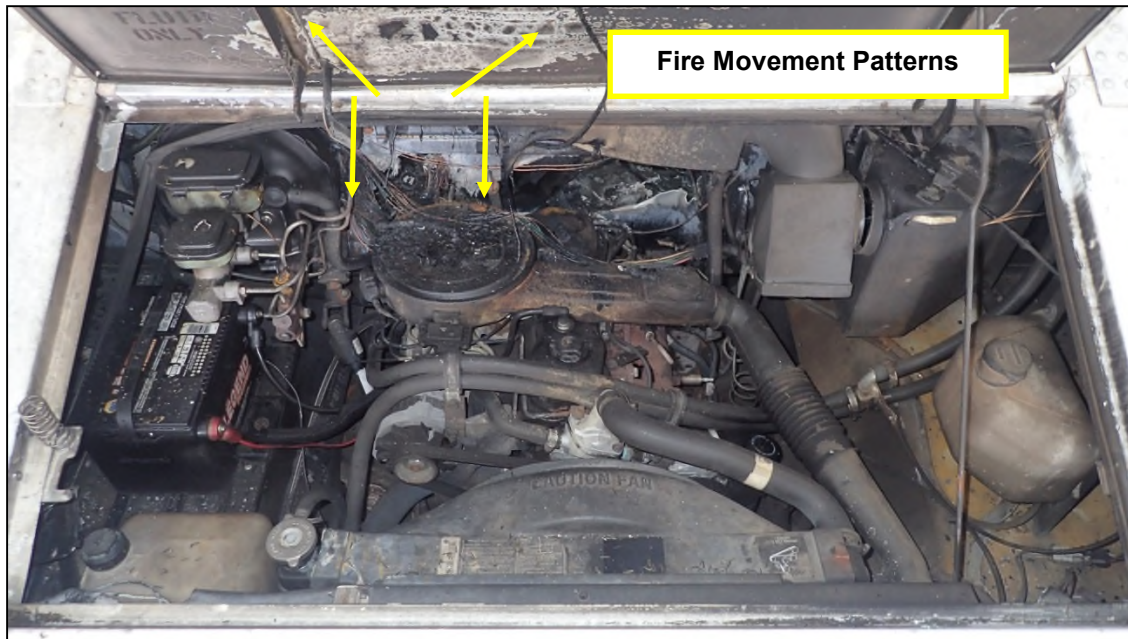
View of the rear and left side exterior.



March 21, 2019
RCG File No. 50809138

Photograph 3

View of the engine compartment.



Photograph 4

View of the dashboard area.



March 21, 2019
RCG File No. 50809138

Photograph 5

View of the headlamp switch in the fire debris.



Photograph 6

View of the headlamp switch and pigtail listed as evidence Item A.



March 21, 2019
RCG File No. 50809138

Photograph 7

View of the fire debris listed as evidence Item B.



March 21, 2019
RCG File No. 50809138

Curriculum Vitae



**GREGORY M. CLOER, C.F.I.
FIRE CONSULTANT**

Mr. Cloer is a Certified Fire Investigator (C.F.I.) by Georgia P.O.S.T., NPQ, N.F.A. and IAAI for fire/arson investigation, and is certified by Georgia P.O.S.T. as a basic peace officer. Mr. Cloer has also served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting & prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator. Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. Mr. Cloer has testified as an expert in criminal court related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certification, P.O.S.T. Basic and Advanced Arson Investigation (Currently Fire Investigator I and II)
Certification, P.O.S.T. Basic Peace Officer
N.F.A. Fire/Arson Investigation
P.O.S.T. Arson Investigator
IAAI-CFI
NPQ Certified Fire Investigator
NPQ Fire Instructor

TRAINING/CERTIFICATES

Certified Fire Investigator • Fire Instructor • Peace Officer • EMT • Paramedic • Advanced Fire Investigator • Advanced Fire Cause & Origin Expert Witness

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1986 – 2015	Cobb County Fire and Emergency Services

DETAILED PROFESSIONAL EXPERIENCE:

RIMKUS CONSULTING GROUP, INC.

2015 - PRESENT

Fire Consultant

Conduct fire, arson, and explosive investigations including residential, commercial, and vehicular losses for clients. Collect and preserve evidence ensuring a precise chain of custody. Conduct interviews with victims, property owners, witnesses, investigators, and pertinent third party organizations. Photograph scenes and prepare detailed written investigative reports as to the conclusions and opinions of the subject loss. Testify in related depositions and trials.



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
5099 Commercial Circle, Suite 100
Concord, California 94520
(925) 677-7439 Telephone
(925) 677-7445 Facsimile

January 2, 2018

Re: RCG File No: 01906528
LLV Number: 2219165
VMF Location: 1675 7th Street Oakland, California
Subject: Preliminary/Final Report

Dear

On November 26, 2017, a fire occurred involving a USPS LLV 2219165. The loss location was reported as Glenlock Street and El Portal Drive in San Pablo, California. LLV 2219165 was examined at the VMF located at 1675 7th Street in Oakland, California.

Rimkus Consulting Group, Inc. was retained to examine the 1992 Chevrolet LLV 2219165 to determine the cause of the fire. During our investigation on December 7, 2017, we conducted an examination of the fire damaged LLV, reviewed the accident report, and documented the vehicle with photographs. The vehicle examination was conducted by Fire Consultant Jimmie McCants, NAFI - CFEI, and was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment and spread to the carrier's compartment.
2. The cause of the fire was due to the LLV being involved in a major front end impact with a stationary light post.

3. The fire originated in the area of the battery and master cylinder. The most probable cause was an electrical short caused by the metal body work being crushed around the battery and other electrical circuits.

Discussion

Exterior Inspection:

Examination of the vehicle began at the front of the vehicle and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The vehicle sustained major exterior fire damage and impact damage.

Interior Inspection:

The operator and mail compartment sustained a large amount of interior fire damage.

Steering Column Inspection:

The steering column was still in the LLV but was heavily damaged by the fire and collision.

Engine Compartment Inspection:

The engine compartment sustained a severe amount of fire and impact damage. The transmission case was broken from the impact and the master cylinder was sitting at a 90 degree angle from where it was previously located. The battery was missing from the engine compartment.

The LLV was equipped with a 2.5L, four-cylinder gas engine.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of fire damage along the bottom side of the engine as well as the sides of the engine. The involved LLV was mounted on a GM frame. The frame on the driver's side of the LLV was bowed out to the point it displaced the side body panel. The fuel lines were examined and they were damaged by both the fire and accident.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained major fire damage. All fuses were damaged and we were unable to determine if any had blown as a result of the fire.

Area of Fire Origin:

Based on the observed patterns of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the engine compartment of the LLV. The origin was more specifically in the area of the battery and master cylinder.

Contributing Factors:

The contributing factor for the fire is the collision just before the fire. it was also raining at the time of the accident. According to reports the LLV hit the light pole at approximately 45 to 50 miles per hour. The cause of the accident is unknown.

Evidence Collected:

No evidence was collected.

Interviews:

We were not able to interview the carrier as she was still in the hospital and according to Mr. the driver, does not remember the accident at all. She only knows that her knee hurt. There was a good Samaritan that pulled the driver from the LLV and he told Mr. that the LLV burst into flames right after the impact. The Samaritan was traveling in the opposite direction and witnessed the accident.

Service Records:

A review of the provided service records for the involved LLV was conducted. There was nothing in the records that would point to a mechanical failure prior to the accident.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of Usps Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jimmie L. McCants, II

Jimmie L. McCants, II, NAFI - CFEI
Fire Consultant

David R. Meyers

David R. Meyers
Technical Fire Manager, IAAI-CFI (V)

Attachments: Photographs, CVs

January 2, 2018
RCG File No. 01906299

Photograph 1
Front of LLV.



Photograph 2
Front of LLV.



January 2, 2018
RCG File No. 01906299

Photograph 3
Crash impact area.



Photograph 4
Driver's side showing displaced door.



January 2, 2018
RCG File No. 01906299

CVs



**JIMMIE McCANTS, IAAI, CFEI
FIRE CONSULTANT**

Mr. McCants is a Certified Fire and Explosion Investigator and a licensed private investigator in California. With 22 years of fire investigation experience and 26 years of law enforcement experience he is uniquely qualified to work the most complex fire losses. He has investigated over 1,000 fires during his long career. He was assigned as a lead investigator for a multi-county fire investigation unit in California. Mr. McCants has investigated several fatal fires as well as numerous high profile fires and bombing incidents throughout northern California. He is well versed in taking statements and in the warning signs of arson and possible insurance fraud cases.

As a prior detective Mr. McCants is well versed in collecting and preserving evidence. His structural fire and explosion experience on scene for various types of occupancies has given him working knowledge of building construction, fire behavior, and post investigation techniques for analyzing damage assessment and fire cause and origin.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire and Explosion Investigator, National Association of Fire Investigators 2012
Certified Arson / Explosive Investigator, Robert Pressley Institute of Criminal Investigations 1999
Associates of Sciences degree Solano Community College, 2000

EMPLOYMENT HISTORY

2013 – Present	Rimkus Consulting Group, Inc.
2011 – 2013	G4S Compliance and Investigations, part-time fire investigator
1985 – 2011	Solano County Sheriff's Office



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.

8 Greenway Plaza, Suite 500

Houston, Texas 77046

Telephone: (800) 580-3228

Certificate of Authorization No. F-1545

Certification Expiration Date September 30, 2019

May 21, 2019

Re: RCG File No: 100000185
LLV Number: 2219188
VMF Location: 5302 Galveston Road Houston, Texas
Subject: Preliminary/Final Report

Dear Ms.

On April 4, 2019, a fire occurred involving US Postal Service vehicle 1992 LLV 2219188 on 1309 Baywood Drive in Bay City, Texas. On April 15, 2019, Rimkus Consulting Group, Inc. was retained to examine LLV 2219188.

On April 19, 2019, we conducted an examination of the LLV at the Houston, Texas vehicle maintenance facility located at 5302 Galveston Road in Houston, Texas. In the course of our work, we examined the vehicle, excavated fire debris and documented with photos. Our work to complete this assignment was performed by Fire Consultant Charles A. Curreri, IAAI-CFI (V). This report and case was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was at and around the exhaust manifold on the left side of engine where oil was sprayed on the exhaust when an engine piston rod penetrated through the engine block.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a thrown piston rod through the engine block causing a hole in the engine block which allowed ignitable engine fluids to be expelled onto the hot surface of the operating LLV and ignite.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. We observed extensive fire and heat damage to the exterior of the vehicle with the greatest degree of direct fire damage at the front engine compartment. The front body components had sustained extensive damage. The rear body components were identifiable with a lesser degree of fire and heat damage as compared to the front engine compartment.

Interior Inspection:

The interior of the vehicle had sustained extensive direct fire and heat damage with the rear of the vehicle sustaining a lesser degree of fire and heat damage as compared to the front passenger compartment of the vehicle. We observed combustible materials in the form of undelivered mail on the floor of the vehicle cargo compartment at the rear of the vehicle. The mail had sustained some fire damage but was still identifiable. The front driver's compartment of the vehicle had been consumed to near completion as a result of the fire. There was no physical evidence observed on the interior of the LLV that would have caused or contributed to the cause of the fire.

Engine Compartment Inspection:

The engine compartment had sustained significant direct fire and heat damage with the combustible components having been consumed to near completion. The metal components in the engine compartment had sustained a greater degree of fire and heat exposure on the driver's side as compared to the passenger side of the vehicle. The engine oil filter was examined. The filter was in place and tight. The oil dip stick was examined. The engine contained no fluid. There was no obvious electrical arcing or failures identified that could have been causative of this fire. The vehicle was equipped with a 2.5L four-cylinder engine. The vehicle was also equipped with a fuel injected throttle body and electronic ignition.

An examination of the engine block was conducted. A large hole was observed on the left side of the engine block directly behind the exhaust manifold. The hole was parallel

with the engine crank shaft and appeared to have been blown from the inside out by a piston rod failure. Based on the fire patterns observed, the left side of the engine within the engine compartment was determined to be the area of origin.

Undercarriage Inspection:

We were unable to do a complete undercarriage examination of the vehicle for safety reasons. Loose components presented a drop hazard and low clearance prevented access. From the areas of the undercarriage we were able to examine the fire damage. It was consistent with a fire originating on the left front of the engine compartment. The vehicle was mounted on a GM frame.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage and mass loss. All fuses were damaged by the fire and were unable to be evaluated.

Area of Fire Origin:

The area of origin was the left front of the engine compartment.

Potential Contributing Factors:

The piston push rod for the third cylinder sustained a catastrophic failure and punctured the engine block allowing engine oil to be expelled onto the hot surfaces of the exhaust manifold. The engine oil then ignited. The fire spread to surrounding combustible components.

Evidence Collected:

No evidence was collected

Witness statement:

We were unable to contact the LLV carrier for a verbal statement, In a written statement, the LLV reportedly was being driven at the time of the fire; the carrier stated the vehicle made a loud "pop" sound, then she saw smoke coming from under the front of the vehicle.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles A. Curreri

Charles A. Curreri, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1
Front view of LLV.

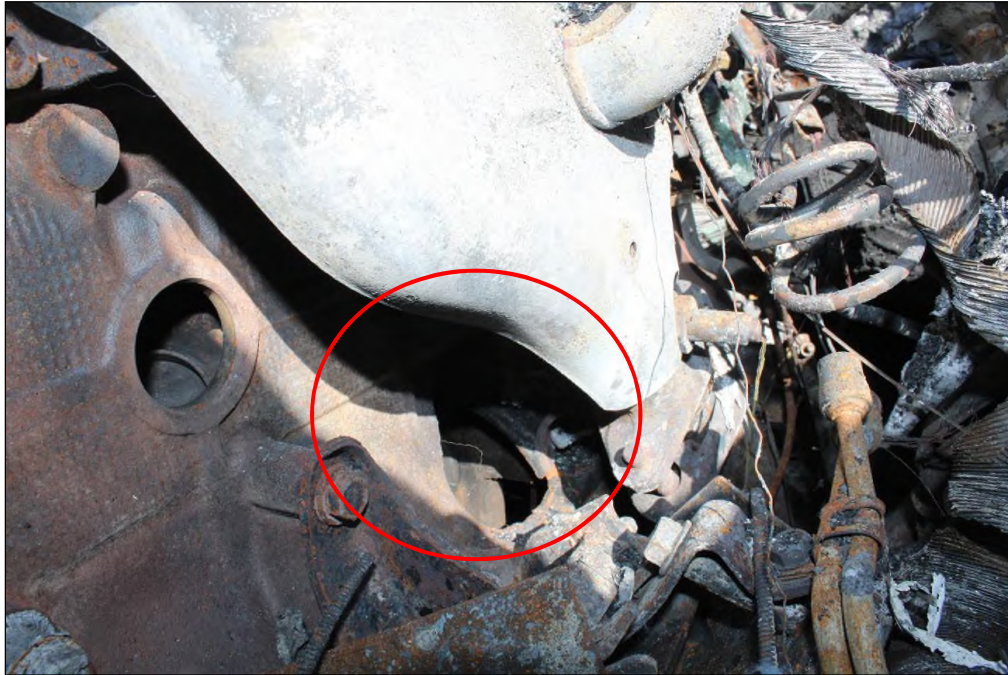


Photograph 2
Front corner view of LLV.



Photograph 3

Third connecting rod by the exhaust manifold through engine block highlighted.



Photograph 4

Exhaust manifold removed and connection rod exposed.



Curriculum Vitae

Charles A. Curreri, CFI, CVFI

Fire Consultant
Gulf Coast Region

Background

Mr. Curreri holds a B.S. in Emergency Management Services Administration. He is also a Certified Fire Investigator and a Certified Vehicle Fire Investigator with the International Association of Arson Investigators and a licensed private investigator in Texas and Louisiana.

Mr. Curreri has over 27 years in fire service, with 16 years as a senior investigator in the arson unit, experience in the field of advanced technical investigations, including a combination of field and management assignments in both small and large-scale fire and explosion property losses, fire death and injury cases, product defects and liability cases, arson for fraud investigations and vehicle fires.

Specific areas of expertise include primary responsibility for direct management and follow up investigation cases where origin, cause and responsibility of fire and explosions are at issue. Past assignments involved local, county, state and federal agencies investigations in residential, commercial, industrial marine, chemical and manufacturing plants and warehouses, heavy equipment, vehicles, product liability and injury/death related fires and explosions.

Consulting expertise includes evaluation of criminal and litigation related matters involving the cases areas described above, as well as explosions with improvised devises and high explosives, fire code and standards compliance, fire detection and response systems, investigation of fraud related incidents (state and federal).

Contact
Information
(713) 621-3550
ccurreri@rimkus.com

Eight Greenway
Plaza, Suite 500
Houston, TX 77046

Professional Engagements

- Emergency Response
 - Mobile Court Police Dept. - Mobile, AL (2016-2017), Property and personal protection as law enforcement officer for 13th Judicial Court, Mobile, AL. Responsible for security of entry points, probate inmates and witnesses and courtroom proceedings. Primary responder for courthouse disruptions.
 - Mobile Fire-Rescue Dept. - Mobile, AL (1989-2016), Fire and explosion investigation, fraud analysis and investigation, vehicle fire and explosions, case management, evidence and records management for arson unit, computer and physical evidence processing and search warrant compliance. Presentation of basic and advance fire and explosion investigation certification classes.
- Subject Matter Expert
 - Fire and Explosion Investigation Certification - Mobile, AL (1989-2016), Instructor of basic and advance fire and explosion investigation certification classes to police and fire.

Forensic Engagements

- Fire/Explosion
 - Tampico, Mexico (2018), Investigated cause and origin of marine fire, small cargo ship fire.
 - Houston, TX (2018), Investigated cause and origin of computer fire.
 - Houston, TX (2018), Investigated fire and explosion origin and cause in silo and warehouse processing plant.
 - Houston, TX (2018), As part of manufacturer recall investigation, determined cause and origin of motor vehicle fire.
 - Houston, TX (2017), Investigated cause and origin of vibratory soil compactor fire.

Professional Experience

- Rimkus Consulting Group, Inc. 2017 - Present
 - Fire Consultant - Gulf Coast
Responsible for determining origin, cause and responsibility of fires and explosions. Investigation of residential, commercial, industrial, marine, heavy equipment and vehicle losses involving fire and explosion origin and cause, fire injury or death, and product liability. Fraud analysis and investigation relating to motive and/or responsibility for fire or arson losses. Fire detection, alarm, suppression and

extinguishing systems.

- Mobile Court Police Dept. 2016 – 2017
 - Police Officer – 13th Judicial Court, Mobile, AL
As law enforcement officer, responsible for property and personal protection. Responsible for security of entry points, probate inmates and witnesses and courtroom proceedings. Primary responder for courthouse disruptions.
- Mobile Fire-Rescue Dept. 1989 – 2016
 - Fire Captain
Fire and explosion investigation, fraud analysis and investigation, vehicle fire and explosions, case management, evidence and records management for arson unit, computer and physical evidence processing and search warrant compliance. Presentation of basic and advance fire and explosion investigation certification classes.
- U.S. Navy Reserve 1990 – 2016
 - Damage Control Senior Chief/Senior Enlisted Advisor, Retired (ESWS/Cox)
Shipboard repair locker leader/fire marshal, fire, flooding systems repair and maintenance, Chemical, Biological and Radiation (CBR) technician, Navy Instructor duties, including planning and training exercises.

Education and Certifications

- Emergency Management Service Administration, B.S.: University of South Alabama (1994)
- Fire Science, A.S.: Bishop State Community College (1992)
- Certified Fire Investigator: International Association of Arson Investigators
- Certified Vehicle Fire Investigator: International Association of Arson Investigators
- Licensed Private Investigator: Texas and Louisiana
- Rapid Intervention Teams Certification: Alabama State Fire College (2015)
- Vehicle Arson Training Certification: Alabama State Fire College (2008)
- Fire Inspector II: Alabama State Fire College (2006)
- Fire Inspector II: Dept. of Defense (2006)
- Fire Fighter I: Dept. of Defense (2005)
- Fire Fighter II: Dept. of Defense (2005)

- Hazardous Materials: Awareness & Operational Certification: Alabama State Fire College (2005)
- Police Officer: Alabama Peace Officers Standards and Training Commission (2004)
- Fire Investigator: Alabama State Fire College (2003)
- Fire Inspector I: Alabama State Fire College (2000)
- Fire Officer II: Alabama State Fire College (1997)
- Fire Officer I: Alabama State Fire College (1996)
- Fire Instructor I: Alabama State Fire College (1996)
- Apparatus Operator: Alabama State Fire College (1996);
- Firefighter II: Alabama State Fire College (1994)
- Certified Paramedic: May-1991
- Firefighter I: Alabama State Fire College (1989)
- Memberships: International Association of Fire Fighters, Police Benevolent Association, Fraternal Order of Police International Firefighters Association, National Fire Academy Alumni Association, National Association of Fire Investigators, Alabama Association of Arson Investigators, Alabama Fire Marshals Association, Navy Enlisted Reserve Association (Life Member), Veterans of Foreign Wars (Life Member), American Legion

Continuing Education

- Texas A&M Engineering Extension Service: WMD/Terrorism Awareness for Emergency Responders (2018); Interactive Motor Vehicle Fire Investigation (2018)
- Auburn University Montgomery: Protective Measures Course (2013); Bomb Making Materials Awareness Program (2013); Improvised Explosive Device (IED) Counterterrorism Workshop (2012);
- National Fire Academy: Electrical Aspects of Fire Investigation (2014); Fire/Arson Investigation (2003, 2013); Fire Dynamics-Fire Modeling (2009); Forensic Evidence Collection (2009); Analysis of Arson Management (2008); Juvenile Fire Setter Intervention Specialist I & II (2008); Interviewing/Interrogation Techniques and Courtroom Testimony (2004); Management for Arson Prevention and Control (2004); Fire Inspection Principles (2001); Fire Service Course Design (1999); Community Education Leadership (1998); Developing Fire and Life Safety Strategies (May 1996); Presenting Effective Public Education Programs (1995)
- U.S. Dept. of Justice: Basic Financial Investigation (2014);

- Physiological/Psychological Factors involved in the Use of Force (2014); Prevention of Violence Against Law Enforcement (2013); Surviving Hidden Weapons Training (2013); Kinesics Statement Analysis Training (2012); Suspect Tactics/Parameter Containment (2012); Kinesics Interview and Interrogation Techniques (2001)
- Alabama Dept. of Public Safety: Investigation Internet Training (2015); Fatal Fire Investigation (2009); Bomb Threat Response and Explosive Recognition (2009); Bomb Threat Assessment (2008); Meth Lab Identification and Response (2008); NBC WMD Forensics and Evidence Collection Course (2001);
 - Special Assignments: Juvenile Fire Risk Specialist (2008); Fire Investigation Section (Apr 1999); Fire Inspection Section (1999); Disaster Medical Assistance Team (1996);
 - Dept. of the Navy: Navy Justice School Legal Officer Course in Military and Administrative Law (2015); Reserve Senior Enlistment Management (R-521-0001) (2012, 2015); United States Navy War College-Primary Enlisted PME Course (2014); Navy Justice School, Senior Enlisted Leadership Course in Military Justice and Civil Law (2013); Watertight Closures Inspection, Maintenance and Repair (K-495-0401B) (2012); Alcohol and Drug Abuse Manager/Supervisor for Leaders Course (CIN-S-501-0130) (2012); Journeyman Instructor Training (CIN A-012-0077) (2011); Alcohol and Drug Abuse Manager/Supervisor (CIN-S-501-0120) (2010); Second Class Swimmer (CIN-A-060-222) (2010); SJFHQ Joint Enabling Capabilities Planner Course (2008); Explosive Driver (JAW NAVSEA SW020 AF HBK 010) (2007); Helo Firefighting Team Training (J-495-0414) (2005); General Shipboard Firefighting (J-495-0412) (1990)
 - Dept. of Defense: Defense Coordinating Officer/Elements Training Program (2009); Emergency Preparedness Liaison Officers Course (2009); Hazmat Awareness and Operations (2005); Driver/Operator Pumper (2005); Fire Officer I (2005); Fire Officer II (Dec 2005); Fire Instructor I (Dec 2005); Fire Inspector I (2005);
 - University of South Alabama: Hazardous Material Specialist (1993); Hazardous Material Commander (1993); Center for Emergency Response Training, Hazardous Material Technician (1992)
 - Emergency Management Institute: IS-OW 00 Introduction to the Incident Command System (ICS 100) (2008); IS-00200 ICS for Single Resources and Initial Action Incidents (2008); IS-00300 Intermediate ICS for Expanding Incidents for Operational First Responders (2008); IS-00800.B National Response Framework, An Introduction National Response Framework (2008); IS-00700 National Incident Management System an Introduction (2003);
 - Dept. of Justice, Federal Bureau of Investigation: FBI Ballistics Testing

- (2011); FBI WMD Directorate's, WMD Basic Course (2009); Drafting Search Warrants w/ Basic Report Writing Techniques (2008); Basic Crime Scene Investigation (2006)
- Dept. of Justice, Bureau of Alcohol, Tobacco, Firearms and Explosives: Post Blast Course (2007)
 - Homeland Security Center for Domestic Preparedness: Digital Photography for Law Enforcement (2016); Surveillance Detection (2013); Advanced Law Enforcement Rapid Response (2012); WMD Response Training (2004);
 - Blackwater Training Center: Force Protection Personal Security Course (2007)
 - Other: Forensic Fire Death Investigations, Collin County Fire Investigators Association (2018); National Computer Forensic Institute, U.S. Secret Service: Basic Mobile Device Investigation (2016); Public Agency Training Council Managing the Property and Evidence Room (2015); Police Training Service, Property and Evidence Management for Law Enforcement (2015); Rapid Response to Active Shooter Training (ALERT Basic I) (2013); Alabama Fire Marshal Permitting and Inspection of Public Display and Proximate Audience Shows (2012); High Risk Warrant Operations (2008); Current Trends in Improvised Explosives (2007); Basic Concepts of Radio and Cellular Technology for Law Enforcement and Emergency Service (2007); Modern Crime Scene Technology (2006); EAT Corp. NBC/WMD Forensics and Evidence Collection Course (2001); National Registry of Emergency Medical Technicians-Provider-Paramedic (1991); Alabama State Board of Health-Provider-Paramedic, EMT-D (1989); National Wildfire Coordinating Group, Basic Wildland Fire (1999)

Publications/Papers

- "Juvenile Fire Setter Program" National Fire Academy Research Papers, 2008
- "Hot Water Safety Program" American Burn Association-Burn Prevention Committee, 2001
- "Summer Safety Program" American Burn Association-Burn Prevention Committee, 2000
- "Gasoline Safety Program" American Burn Association-Burn Prevention Committee, 1999
- "Rapid Intervention Crews" National Fire Academy Research Papers, 1999
- "Dive Rescue Teams Program for the City of Mobile" Prepared for the University of South Alabama and Mobile Fire Rescue Dept., 1994



Rimkus Consulting Group, Inc.
609 South Kelly, Suite C-1
Edmond, OK 73003
(888) 611-7770 Telephone
(405) 340-8513 Facsimile
Certificate of Authorization No. 3201
Certification Expiration Date June 30, 2017

November 22, 2016

Re: RCG File No: 22804187
LLV Number: 3300751
VMF Location: 10151 E. 31st Street, Suite B in Tulsa, Oklahoma
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was requested on September 12, 2016, to examine the vehicle fire loss involving USPS LLV 3300751 that occurred at 1101 S. Muskogee Avenue in Tahlequah, Oklahoma on July 29, 2016. In the course of our work, we examined and documented the fire-damaged vehicle and interviewed the VMF Shop Supervisor on September 13, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 10151 E. 31st Street, Suite B in Tulsa, Oklahoma. The work to complete this assignment was performed by Fire Consultant Christopher M. Woodall, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator compartment of the involved LLV.
2. The specific area of fire origin was determined to be within the fuse block position under the dashboard on the operator side.

3. The specific ignition sequence and cause of the fire was determined to be an adverse electrical event that occurred within the fuse block which melted and ignited the fuse housing and block. The fire was contained to the fuse block and did not spread throughout the LLV.

Observations

Exterior Inspection:

Exterior examination of the vehicle revealed no signs of fire, smoke, or heat related damage.

Interior Inspection:

Interior inspection revealed no signs of fire related damage to the vehicle. The cargo compartment showed no signs of fire damage as well.

Engine Compartment Inspection:

There was no evidence of fire damage observed in the engine compartment. We examined all fluids levels, and all were within the recommended range. We examined the components of the electrical system of the vehicle, and noted no adverse electrical activity or arcing. A daytime running light module was found in the engine compartment, but had been placed "out of service" at some point prior to the fire. The vehicle was equipped with a GM fuel system.

Undercarriage Inspection:

Examination of the undercarriage revealed no evidence of soot, smoke, heat, or fire damage. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

Examination of the fuse panel located within the operator's compartment revealed evidence of melting around the hazard flasher fuse location and a normally empty fuse location that had been used for the daytime running lights. The fuse panel did not have a cover.

Area of Fire Origin:

The area of fire origin was determined to be the fuse block inside the passenger compartment.

Potential Contributing Factors:

During the examination we were able to determine that the hazard flasher fuse location along with the stop lights, cigarette lighter port, and the fuse location used for the daytime running lights were all on the same four-bus power supply in the fuse block.

Evidence Collected:

The fuse block and partial wiring harness were collected and shipped to the Charlotte, North Carolina office to be examined in the lab.

The collected fuse box was examined and confirmed an adverse electrical event had occurred and caused the fire. The fire and melting was contained to the fuse block and did not spread throughout the LLV.

Interviews:

The acting VMF supervisor was interviewed. He stated that there has been significant history with the hazard flasher fuse and circuit getting hot and melting. He said that the carriers turn the flashers on and leave them on throughout the day while on their routes and the circuit gets hot. He also stated that the cigarette lighter circuit and the hazard flasher circuit needs to be separated and on different buses in the fuse block, and the cigarette lighter port should only have power supplied when the key is on. He also stated that he thinks the brown wire going from the hazard switch to the fuse panel needs to be a heavier gauge.

A VMF technician, was interviewed. He stated that he removed the wiring for the daytime running lights on July 30, 2016 prior to my inspection.

A supervisor at the USPS in Tahlequah, OK, was interviewed. She stated that at the end of the carrier's tour, the LLV was parked. The carrier went back to the LLV to get something that he had forgotten and he smelled something burning. She stated that the carrier told her that he didn't have anything plugged in to the cigarette lighter port.

Service Records:

A review of the service records for the involved LLV did not indicate any recent repairs that would have caused or contributed to the cause of the fire. There were no indicated complaints or repairs involving the fuse block or electrical systems.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Christopher M. Woodall

Christopher M. Woodall, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

November 22, 2016
RCG File No. 22804187

Photograph 1

View of the LLV that was inspected.



Photograph 2

View of the cargo compartment.



November 22, 2016
RCG File No. 22804187

Photograph 3

View of the engine compartment.



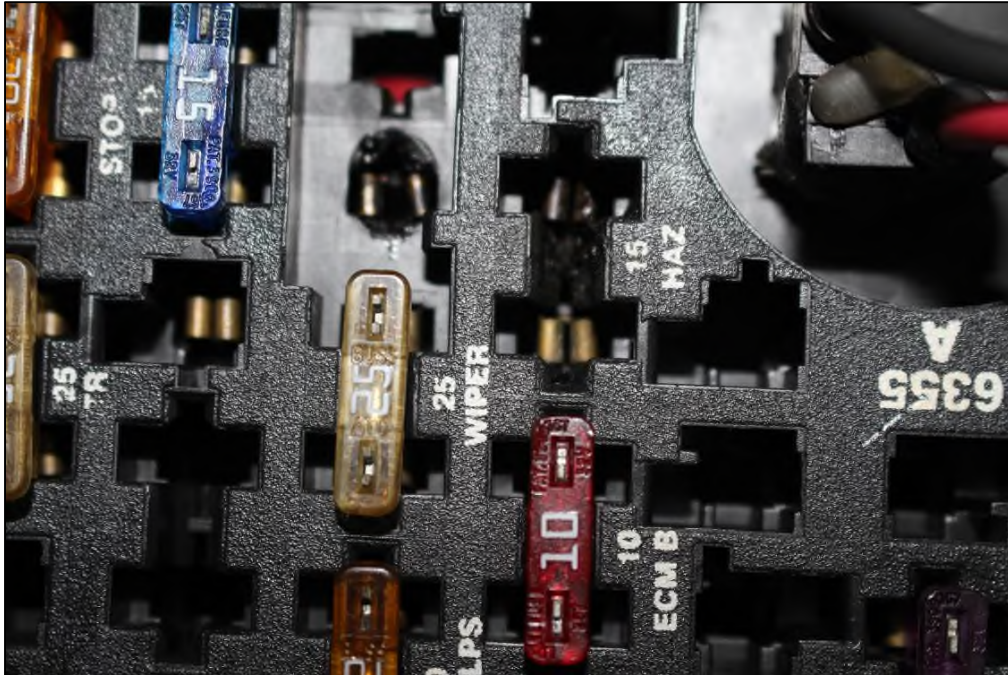
Photograph 4

View of the passenger compartment.



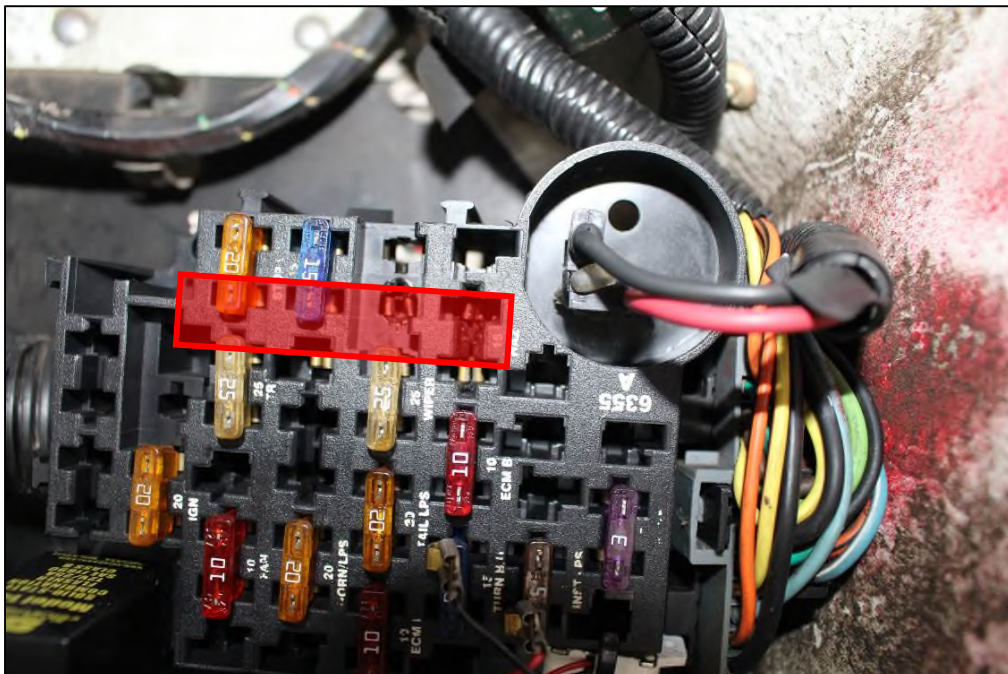
Photograph 5

View of the melted areas of the fuse block.



Photograph 6

View of the four fuse locations that are part of the same bus.



November 22, 2016
RCG File No. 22804187

CVs



CHRISTOPHER M. WOODALL, IAAI-CFI FIRE CONSULTANT

Mr. Woodall has over 12 years of experience in the fire service including field assignments in both small and large scale fire property losses, fire death and injury cases, arson for fraud investigations, and training & development solutions. Specific area of expertise is in determining the origin, cause and responsibility of fire and explosion losses. These assignments involve residential, commercial, industrial, vehicle, marine vessels, farm implement, heavy equipment, chemical, manufacturing, product liability and injury/death related fires and explosions. Mr. Woodall has extensive training in fire and criminal investigations, as well as response to hazardous material, chemical, and biological and EMS incidents. He is certified through the International Association of Arson Investigators as a Certified Fire Investigator (IAAI-CFI).

Consulting expertise includes evaluation of litigation related matters involving the case areas described above as well as explosions involving LPG, natural gas, fire code and standards compliance, fire detection and response systems, and investigation of fraud related fire incidents.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Western Oklahoma State College

- Fire Science 60 Hours

Oklahoma Chapter of the International Association of Special Investigation Units

- Member 2015 – Present

Oklahoma Chapter of the International Association of Arson Investigators

- Board Member 2014 – Present
- Member 2010 – Present

International Association of Arson Investigators

- Member 2010 – Present

International Association of Fire Fighters

- Member 2003 – 2015

National Fire Protection Association

- Member 2012 – Present

Fire Marshal's Association of Oklahoma

- Member 2010 – 2015

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2015 – Present	Fletcher Police Department
2011 – Present	Oklahoma State University
2003 – 2015	Lawton Fire Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
5707 South Laburnum Avenue
Richmond, VA 23231
757-229-2226 Telephone
(888) 286-9943 Facsimile

February 10, 2016

Re: RCG File No: 47602514
LLV Number: 3301199
VMF Location: 1001 School Street in Richmond, Virginia
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 3301199, which reportedly occurred at 6025 Pocosham Drive in Richmond, Virginia on November 27, 2015. In the course of the work, we examined and documented the fire-damaged vehicle, and interviewed the carrier/operator on November 25, 2015.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 1001 School Street in Richmond, Virginia. The work to complete this assignment was performed by Fire Consultant William R. Clark, IAAI-CFI. This report and file are being reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach, as recommended in the current edition of National Fire Protection Association's NFPA-921, "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated on the exterior undercarriage of the involved LLV.
2. The specific area of origin was under the engine compartment.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of the carrier/operator pulling into a pile of leaves and debris at a mail stop and then sitting there for a period of time with the debris in direct

contact with the hot components of the operating vehicle which subsequently ignited the leaves and debris under the vehicle.

Observations

Exterior Inspection:

The left and right fenders displayed significant fire damage; the left side of the hood had been consumed by the fire, the right side was intact. The fire had destroyed the front section of the cab, the cargo area displayed fire damage to the left interior wall and door.

Interior Inspection:

The interior examination of the vehicle revealed that the dashboard had been destroyed. The right side step board had been compromised; the fire had penetrated from the undercarriage. There was a visible heat pattern on the back upper section of the left step area that also generated from the undercarriage of the vehicle. The left side door had a loss of mass pattern that generated at floor level and proceed upwards.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment, revealed that fire originated from the undercarriage, and communicated upwards to the engine compartment. Examination of the oil dipstick showed that the oil level and transmission fluid were found within normal operating levels. The remains of the battery were found inside the cab area. They were placed there before movement from the fire scene. The battery had sustained damage from the fire. The rubber sections of intake and return fuel lines had been destroyed. The filter is located on the left side of the engine in the area of the fuel lines. The engine is a 2.5 liter. The LLV was equipped with a GM fuel filter system.

Undercarriage Inspection:

Examination of the undercarriage revealed severe oxidation to both frame rails and the skid pan. Penetration of the aluminum step on the right side and the base of the left door of the vehicle were observed. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel inside the cab had sustained moderate fire damage. Melting of the fuse panel prevented the examination of the fuses; the insulation on the conductors in the area of the fuse panel had been consumed by the fire.

Area of Fire Origin:

The area of origin was determined to be the undercarriage.

Contributing Factors:

Examination of the vehicle and all relevant investigative data indicated that hot surfaces on the undercarriage of the operating vehicle came in contact with dry leaves at the mail delivery location, igniting them. The fire then communicated throughout the vehicle.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interview:

The driver was interview on December 11, 2015, by telephone. She stated that she had been operating the vehicle for about four or five hours. The vehicle had been operating a little rough. She had been at a mailbox for one to two minutes, when she noticed smoke coming up through the floorboard. She exited the vehicle and looked under it and saw the ground on fire. She further stated that the leaves at the mail box were in contact with the bottom of the truck.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William R. Clark

William R. Clark, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Eastern Region Fire Manager

Attachments: Photographs, CVs

February 10, 2016
RCG File No. 47602514

Photograph 1
Front view of vehicle.



Photograph 2
Left side of vehicle.



February 10, 2016
RCG File No. 47602514

Photograph 3
Right side of vehicle.



Photograph 4
Fuel lines and filter located on left side of engine.



February 10, 2016
RCG File No. 47602514

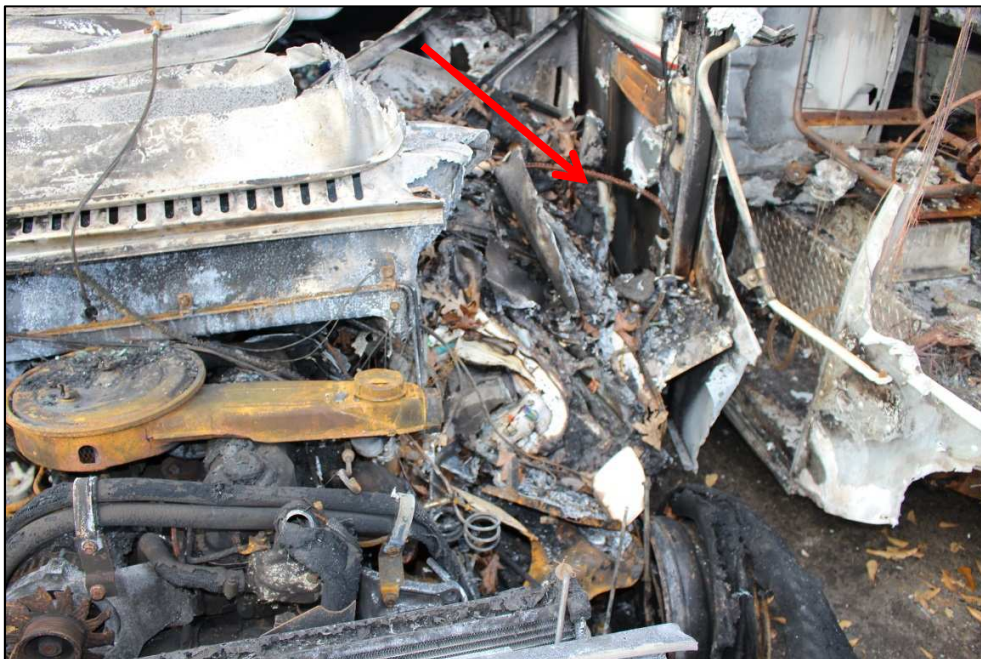
Photograph 5

Fire damage to right step area.



Photograph 6

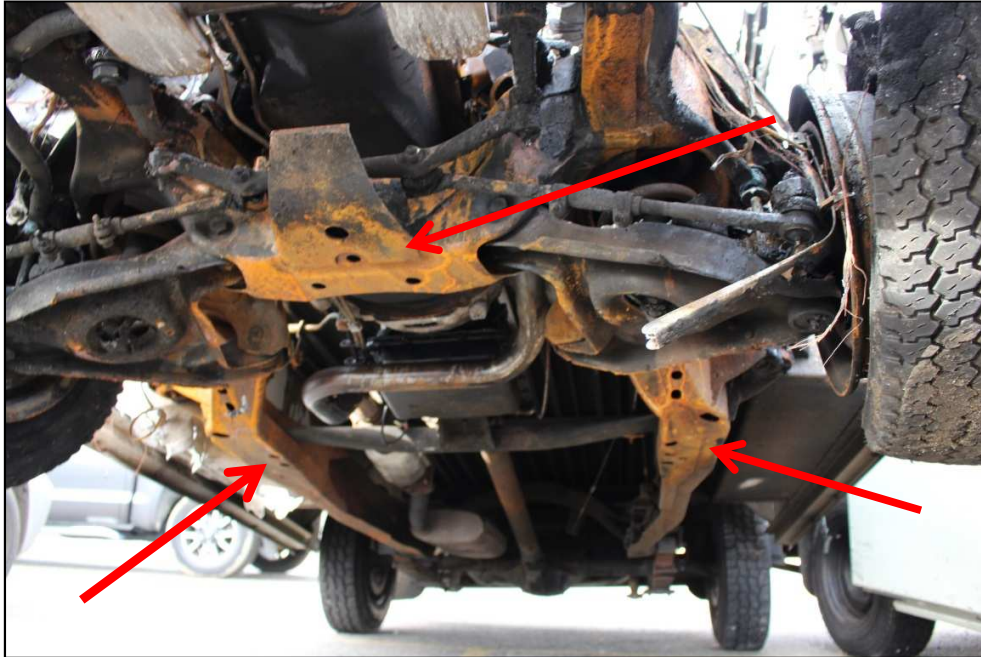
Fire pattern on left door that originates at the base of the door and spreads upwards.



February 10, 2016
RCG File No. 47602514

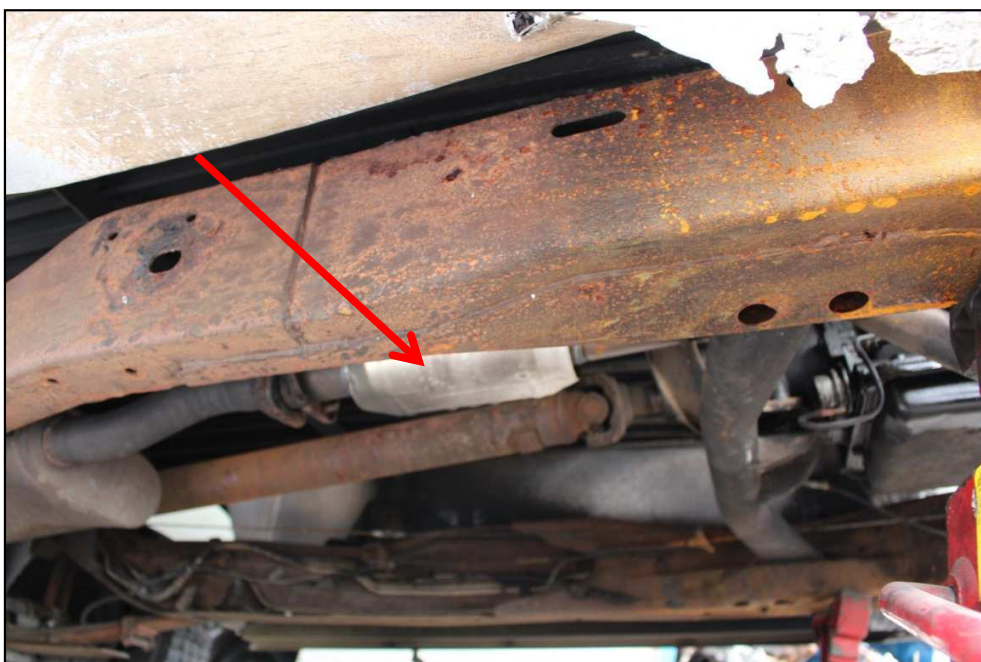
Photograph 7

View of undercarriage – note the oxidation damage to the both frame rails and the skid pan.



Photograph 8

View of the catalytic converter located on the underside of the vehicle.



February 10, 2016
RCG File No. 47602514

CVs



**William “Bill” Clark, IAAI-CFI, CFEI, CVFI
Fire Consultant**

Mr. Clark is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (VACFI) with the Virginia Department of Fire Programs. Mr. Clark is a Registered Private Investigator with the Virginia Department of Criminal Justice Services.

Mr. Clark has conducted over 900 fire/explosions investigations as a law enforcement officer and private fire investigator. These fire/explosion investigations have involved commercial & residential structures, as well as heavy equipment and vehicles. Mr. Clark has extensive experience investigating fires involving injury and death. Mr. Clark has also conducted investigations involving hazardous materials. Mr. Clark has instructed firefighters, police, and military in fire investigation procedures, death investigations, evidence collection, homemade explosives, and post blast investigations, weapons of mass destruction & clandestine lab recognition and safety.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Tidewater Community College, Virginia Beach, VA
Associates in Fire Science, 12 Credit Hours

Virginia Department of Fire Programs
Firefighter 1, 2, & 3, 1987

Virginia Department of Criminal Justice Academy, Petersburg, VA
Police Academy, 1989

National Fire Academy, Emmetsburg, MD
Fire/Arson Investigation Course, 1996

Virginia Department of Forensic Sciences, Lynchburg, VA
Death Investigation, 2000

Greater Cincinnati Regional Arson and Fire Investigation Association
Fire Investigation, 2003

North Carolina/South Carolina International Association of Arson Investigators Fire Investigation Seminar, 2015

Virginia State Police, Richmond, VA
Vehicle Theft Investigation, 2003

Virginia Chapter of the International Association of Arson Investigators
Electrical Fire Investigation, 2000
Fire Investigation, 2001
Small Appliance Fire Investigation 2001
Fire Investigation, 2003
Fatal Fire Investigation, 2004
Fire Investigation, 2008
Meeting the 1033/921 Challenge, 2013

William “Bill” Clark, IAAI-CFI, CFEI, CVFI

Bureau of Alcohol, Tobacco, Firearms, & Explosives, Richmond, VA
Post Blast Investigation, 2004

Virginia Department of Fire Programs, Norfolk, VA
Environmental Crimes Investigations, 2005
Arson Scene Evidence Processing, 2009

Central Shenandoah Criminal Justice Training Academy, Weyers Cave, VA
Crime Scene Investigations Course, 2005

Central Virginia Criminal Justice Academy, Lynchburg, VA
Reid Interviewing Techniques, 2006
Reid Interview Advanced Techniques, 2007

Public Agency Training Council
Vehicle Fire Investigation Course, 2006
Arson Evidence Collection Course, 2007
Arson for Profit Course, 2009

Federal Emergency Management Agency, Anniston, AL
Hazardous Materials Technician, 2008

Zero Point, Virginia Beach, VA
Advanced Homemade Explosives, 2012

Safety Unlimited
HAZWOPER Training & Certification, 2014

Member of: National Association of Fire Investigators
 International Association of Bomb Technicians & Investigators
 International Association of Arson Investigators
 Virginia Chapter – International Association of Arson Investigators

EMPLOYMENT HISTORY

2014 to Present	Rimkus Consulting Group, Inc.
2006 to 2014	Fire Technology Consultants, LLC (Part Time)
2009 to 2012	Joint Improvised Explosive Device Defeat Organization (MPRI Contractor)
2004 to 2009	Albemarle County Fire Marshal's Office
2003	Donan Engineering Company
2001 to 2006	Danielson Investigative Services (Part Time)
2001 to 2006	Fire Analysis Consulting Group (Part Time)
1998 to 2003	Amherst County Sheriff's Office
1989 to 1998	City of Franklin Police Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
1881 Worcester Rd.
Suite 203
Framingham, MA 01701
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

February 10, 2016

Re: RCG File No: 44802519
LLV Number: 3302989
VMF Location: 171 Kennebec Street in Portland, Maine
Subject: Final Report

On December 2, 2015, a fire occurred involving vehicle LLV 3302989, VIN 1GBCS10AxP2910831 owned and operated by the USPS. The vehicle was located and inspected in Portland, Maine. Rimkus Consulting Group, Inc. was retained to determine the origin and cause of the fire. Our inspection of the vehicle occurred on December 10, 2015.

In the course of our work, we inspected and photographed the vehicle and reviewed the work order history. Our work to complete this assignment was conducted by Mr. Scott S. Popovich, CFEI, Fire Consultant. This report and case documentation was technically review by Mr. Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended by the current edition of National Fire Protection Association's N.F.P.A. 921 – "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be in and around the exhaust manifold and rubber fuels lines that were routed in the area.

3. The specific ignition sequence and cause of the fire was determined to be the result of the rubber fuel lines degrading due to radiant heat from the exhaust manifold during operation which caused the fuel lines to fail and expel gas onto the hot manifold subsequently causing the ignitable liquid vapors to ignite.

Observations

Exterior Inspection:

The examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left refers to the passenger side. We observed movement and intensity fire patterns on the front of the vehicle indicating a fire originating in the engine compartment. The windshield was broken due to thermal conditions. The left fender, firewall, and roof were significantly consumed by fire. The left headlight trim was melted. Smoke stains were observed at the top of the driver's door extending to the roof. The side triangle windows were cracked due to thermal damage. The rear overhead cargo door had fire patterns on the top indicating it was in the "up" position when the fire occurred. Some smoke staining was present on the roof above the rear door. All four tires were intact and inflated.

Interior Inspection:

The interior was inspected. The inspection began at the rear of the vehicle in the cargo compartment. Some light fire debris and the engine hood were observed on the floor of the cargo area. Movement and intensity fire patterns on both side walls indicated a fire progressing from the front of the vehicle to the rear. The driver's seat sustained melting of the covering material. The debris in the interior was systematically delayered and removed to the rear cargo compartment. We did not observe any material with evidentiary value in the debris. The electrical conductors were examined in the interior. We did not observe any evidence of adverse electrical activity or anomalies in the conductors. The key was observed in the ignition switch which was in the "on" position. Fire damage on the interior was determined to be caused by fire extension from the engine compartment through the manufactured openings in the fire wall and consumption of the aluminum. The fire did not originate in the interior operator and cargo compartments of the LLV.

Engine Compartment Inspection:

The engine compartment was examined from above. A portion of the remaining engine compartment hood was in the cargo compartment at the time of our inspection. The hood had evidence of fire and melting damage on the passenger's side of the vehicle. The aluminum fire wall and fenders were consumed by fire on the passenger's side of

the engine compartment. Flame impingement damage was observed throughout the engine compartment with the most severe damage to the left side of engine. The electrical conductors were examined in the engine compartment and we did not observe any adverse electrical activity. Movement and intensity fire patterns indicated that the fire originated on the lower left side of the engine at the exhaust manifold. The fuel lines were found consumed in this area. An inspection of exemplar vehicles at this time showed damage to the fuel lines that were in close proximity to the exhaust manifold.

Undercarriage Inspection:

The vehicle was placed on a mechanical inspection lift and the undercarriage was examined. The vehicle was mounted on a GM frame and we did not observe any fire damage or anomalies to the undercarriage of the LLV. The lines running along the chassis were examined and we did not observe any damage from the rear of the vehicle to the engine compartment. The LLV was equipped with a GM fuel filter system.

Fuse Panel Inspection:

The fuse panel was inspected. The protective cover was melted off. Some of the fuses started to display melting on the top exposed plastic. Two twenty amp fuses were found to be open. The fuses were in the horn and tail light circuits.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated at the exhaust manifold in the vicinity of the rubber fuel line that descended from the fuel filter on the lower left side of the engine. The rubber hose was compromised due to radiant heat and caused fuel to leak and become ignited on the hot surface of the manifold.

Contributing Factors:

One of the potential contributing factors was probably physical damage to the rubber fuel supply line that is in close proximity to the exhaust manifold. At the time of this inspection, three exemplar vehicles were inspected and physical damage was noted on the fuel supply lines in the same area.

Evidence Collected:

No evidence was collected.

Interview:

On January 5, 2016, a telephone interview was conducted with the driver of the vehicle. He reported the following information:

- He was at the beginning of his route and had been out driving for approximately a half of an hour.
- He heard a “clunk” and then smoke started coming from the hood.
- He contacted the office by cell phone to alert them of the fire.
- He tried to open the hood but it was too hot.
- Flames started to show from the bottom of the vehicle underneath the engine.
- He put it in park and shut off the vehicle.
- He then decided to remove the mail from the vehicle.
- No fire extinguisher was available on the vehicle.
- The fire department took approximately half an hour to arrive.
- The LLV had been assigned to him for approximately one year.
- There was one other substitute driver that used the LLV occasionally.
- He could not recall any issues with the vehicle and only remembered it having normal servicing.

Service Records:

A review of service records did not indicate that there was any service performed that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Scott S. Popovich

Scott S. Popovich, CFEI, CFPS
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

February 10, 2016
RCG File No. 44802519

Photograph 1
Front and left side of LLV.



Photograph 2
Engine compartment and front of the LLV.



February 10, 2016
RCG File No. 44802519

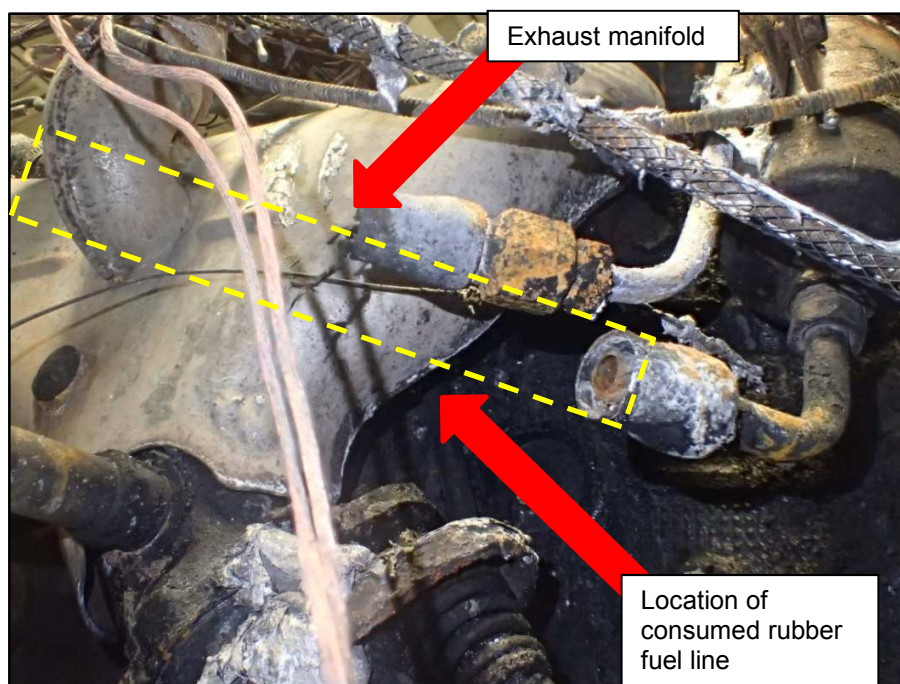
Photograph 3

Engine compartment from above.



Photograph 4

Close up of the area of the fire origin.



February 10, 2016
RCG File No. 44802519

CVs



SCOTT S. POPOVICH, CFPS, CFEI, CVFI, FIT FIRE CONSULTANT

Mr. Popovich's professional career includes 25 years with the Woonsocket Fire Department in the city of Woonsocket, RI. In that capacity he has been involved in many different emergency services including Deputy Director of Emergency Management, Assistant Fire Marshal, Lieutenant and Firefighter. As a licensed state of Rhode Island Assistant Deputy State Fire Marshal his duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Popovich has a Master of Science in Fire and Arson Investigation from the University of New Haven with a heavy concentration in forensics and a Bachelor of Science in Public Administration from Roger Williams University. He maintains certifications as a fire investigator and fire inspector and has attended numerous classes at the National Fire Academy and the Rhode Island State Crime Laboratory.

Mr. Popovich was recently recognized for project development for the planning and execution of Emergency Response Training for CVS Corporate Headquarters in Woonsocket, Rhode Island.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

M.S. – Fire and Arson Investigation – University of New Haven, Connecticut
B.S. – Public Administration – Roger Williams University, Rhode Island
A.S. – Fire Science – Community College of Rhode Island

Licenses and Certifications

Fire Investigative Technician (FIT) by the International Association of Arson Investigators
Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) by the National Association of Fire Investigators
Certified Fire Protection Specialist (CFPS) by the National Fire Protection Association
Certified Fire Inspector (CFI) by the National Fire Protection Association
Certified Evidence Collection Technician (ECT) by the International Association of Arson Investigators
Licensed Emergency Medical Technician by the State of Rhode Island
Licensed Oil Heat Technician
Licensed Hoisting Equipment Operator by the State of Rhode Island
Licensed Private Detective in the State of Rhode Island

Professional Memberships

IAAI (International Association of Arson Investigators)
RIIAAI (Rhode Island Chapter of International Association of Arson Investigators) Board Member



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
10 Kimler Drive, Suite G
Maryland Heights, MO 63043
(888) 286-0127 Telephone
(314) 432-9501 Facsimile

July 10, 2017

Re: RCG File No:

LLV Number: 53502859
LLV Location: 3303354
Subject: Kosmetic Kar Doctor 3309 Highway 72 Jackson, Missouri
Preliminary/Final Report

Dear

On May 31, 2017, a fire occurred involving a US Postal Service vehicle located adjacent to the NDCBU's at 395 Walnut Street in Jackson, Missouri. On June 5, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1993 Chevrolet LLV 3303354 with a vehicle identification number (VIN) of 1GBCS10A0P2911227. On June 14, 2017, we conducted a fire origin and cause examination on the vehicle at Kosmetic Kar Doctor located at 3309 Highway 72 in Jackson, Missouri.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records, collected physical evidence, and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Philip M. Noah, IAAI-CFI. A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the vehicle.
2. The specific area of origin was determined to be on the front left side of the engine.

3. The point of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
5. We could not eliminate the possibility of an engine fluid leak (IE: fuel, oil, transmission fluid) onto a hot engine surface as the possible cause of the fire or a failure of the fan belt pulley system.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed in the engine compartment, cargo area, and the mail compartment. Total mass loss was observed to the windshield, engine hood assembly, dashboard and multiple engine components. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer which were Goodyear LT 195/75 R15. There was no evidence to indicate that the brakes, wheel assemblies, or axles had failed. The fuel cap was in place and secured.

The front of the vehicle had sustained severe fire damage and mass loss. The cover for the engine compartment had been consumed by the fire. The bulkhead between the engine compartment and the driver's compartment had also been consumed. Severe fire damage was observed to the left, mail side of the vehicle. The left front fender had been consumed. The left side mail door and aluminum frame had partially melted. Severe fire damage was also observed to the cargo area. The rear rolling door had sustained severe fire and heat damage. The right, driver's side sustained fire and heat damage to the driver's door in the area of the window. The right front fender sustained fire and heat damage to the upper portion. The entire aluminum roof of the vehicle had melted as the result of thermal exposure from the fire. The aluminum side walls had failed and were observed pushed outward due to severe heat and fire damage on the interior of the vehicle.

The exhaust system was observed with thermal damage only. The rear wheels, brakes, brake lines, and tires were observed with thermal fire damage only. The right front tire, wheel, brake, and brake line had sustained severe fire damage. The left tire sustained

severe fire damage. The brakes, brake lines and wheels were observed with external thermal damage only. The rear axle was not leaking or damaged. The transmission was undamaged. The fuel lines were intact along the left open frame. The flexible fuel lines at the cross over to the right side above the transmission were observed with severe fire damage and mass loss.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage throughout. All combustible seating material had been consumed, exposing the metal seat frame. The steering column and brake pedal assembly had been severely fire damaged. The mail tray had collapsed and partially melted. The rear cargo area sustained fire, heat and smoke damage throughout. The left side panel sustained severe fire and heat damage. The front bulkhead had been consumed. The fuse block located on the right side of the driver's compartment had fallen into the engine compartment and was too severely damaged by the fire to be evaluated. There was no evidence of adverse electrical activity to the circuits that were observed. The ignition was too severely damaged to be evaluated. The heater fan was not present in the debris and the coil was found on the ground beneath the front left tire. The wiring harness was examined and no evidence of adverse electrical activity was observed.

The most severe fire damage was observed at the bulkhead, dashboard, windshield, and steering column. The burn patterns observed to the interior area progressed upward and outward from the engine compartment. After a review of the progression of the burn patterns it was determined the fire progressed from the engine compartment into the mail compartment through the manufactured holes in the bulkhead and due to the failure of the windshield.

Engine Compartment Inspection:

Examination of the engine compartment revealed severe fire damage throughout the compartment. The vehicle was equipped with a GM 2.5L, 4 cylinder gasoline engine. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the engine compartment. The engine compartment sustained fire, heat and smoke damage throughout. The damage was most severe on the left front area of the engine compartment. The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been partially consumed. The melted remains of the fuse box from the mail compartment and the attached wiring harness were inspected. The wiring harness sustained fire and heat damage. The insulation had been consumed. The alternator sustained severe fire and heat damage. The insulation had been consumed from the conductors to the alternator. The main conductor was secure with no evidence of adverse electrical activity. The auxiliary conductor was secure. The top of the battery case had sustained severe fire and heat

damage. The conductors and terminals had become detached from the battery. The negative conductor was attached to the frame and to the block. The main positive conductor was attached to the starter. The insulation had been consumed but displayed no evidence of adverse electrical activity. The fuel rail was intact, however had sustained severe fire damage. The injectors sustained heat damage but were intact. The fuel lines had sustained severe fire damage, however were intact. The power steering unit positioned at the left front of the engine sustained severe fire damage. The flexible return line and reservoir had been consumed. The upper radiator hose sustained severe fire and heat damage. The flexible section of the vapor return line from the fuel tank to the canister mounted in the grill had been consumed. The canister had sustained severe fire and heat damage. The flexible section from the canister to the solenoid at the rear of the throttle body had been consumed. The starter was undamaged by the fire and the conductors were secure. The insulation had been consumed on the conductors routed across the engine from the battery to the starter.

The fuel line was intact from the fuel filter positioned at the bulkhead. The flexible section of fuel line from the left front of the vehicle to the fuel filter had been consumed. The fixed fuel lines at the left front of the engine compartment were in place the flexible lines and vapor line from the front of the frame had sustained severe fire and heat damage. The vapor line to the charcoal canister positioned in the left front corner had been consumed. The charcoal canister sustained fire and heat damage. The fan belt was consumed and the pulley system components were observed with severe fire damage and oxidation. The main pulley was observed with mechanical damage, based on the damage observe we could not determine if the mechanical damage was pre-fire or due to fire suppression efforts.

Burn patterns observed in the engine compartment confirmed the fire originated in the front left area of the engine compartment and progressed upward and outward throughout the engine compartment and into the mail and cargo compartments.

Undercarriage Inspection:

Examination of the rear undercarriage revealed minor evidence of soot, smoke, heat and fire damage. There was an accumulation of oil residue on the rear axle. The undercarriage in the area of the engine sustained moderate fire and heat damage. There was an accumulation of oil residue present. The involved LLV was mounted on a GM frame. The fuel lines were positioned within the open frame routed to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. The fuel lines were routed above the transmission to the right side of the engine. The rubber sections of the fuel lines at the transmission were observed with minor fire damage but were intact. The top of the transmission sustained severe fire damage from the engine compartment. The damage was most severe below the connection of the fuel filter. The rear axle was not leaking or damaged. The transmissions internal components

were undamaged. There were no indications observed that the fire originated in the undercarriage of the vehicle.

Fuse Panel Inspection:

The fuse panel of the mail compartment which had fallen into the engine compartment was observed with severe fire damage. Examination of the fuse panel revealed severe fire damage and mass loss to the panel and all of the fuses, due to the severe fire damage we were not able to determine if any fuses were open.

Area of Fire Origin:

Based on the observed patterns of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the engine compartment of the vehicle. The area of origin was determined to be on the front left side of the engine compartment. The specific point of origin could not be conclusively identified due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination. We could not eliminate the possibility of an engine fluid leak (IE: fuel, oil, transmission fluid) onto a hot engine surface as the possible cause of the fire or a failure of the fan belt pulley system.

Evidence Collected:

The remains of front idler pulley, along with the fuel pump and the power steering pump, were identified and removed. These items were catalogued and shipped to the Rimkus office in Charlotte for retention.

Service Records:

A review of the service records provided for the involved LLV was completed. The last preventative maintenance was reported to be March 22, 2017. A new master cylinder was installed May 9, 2017. On May 9, 2017, the vehicle was written up for transmission problems by the Kosmetic Kar Doctor staff.

After a review of the service records, it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Interview:

On June 26, 2017, a telephone interview was completed with the driver of the vehicle. During the interview, she reported the following information:

- On the date of the fire, she was delivering mail in the Mulberry Acres Trailer Park. When she pulled into the park, she observed a smell similar to charcoal in a barbeque grill or burning trash.
- She shut the vehicle off and exited the vehicle to deliver the mail. Upon returning, she re-started the vehicle and again detected a burning odor similar to the previous odor.
- A customer alerted her to smoke coming from the left, front side of the hood. Mr. was unsuccessful in an attempt to open the vehicle's hood due to intense heat.
- Another person passing by reported observing fire "dripping" onto the ground from the front of the engine compartment.
- She did not recall hearing any belts "squealing" or any other problems prior to the fire.
- She completed the daily check on the date of the incident. No fluids were added and no other problems were noted.
- She, along with the two customers, were able to remove the contents of the cargo compartment without incident.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Phillip M. Noah

Philip M. Noah, IAAI-CFI, CVFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

July 10, 2017
RCG File No. 53502859

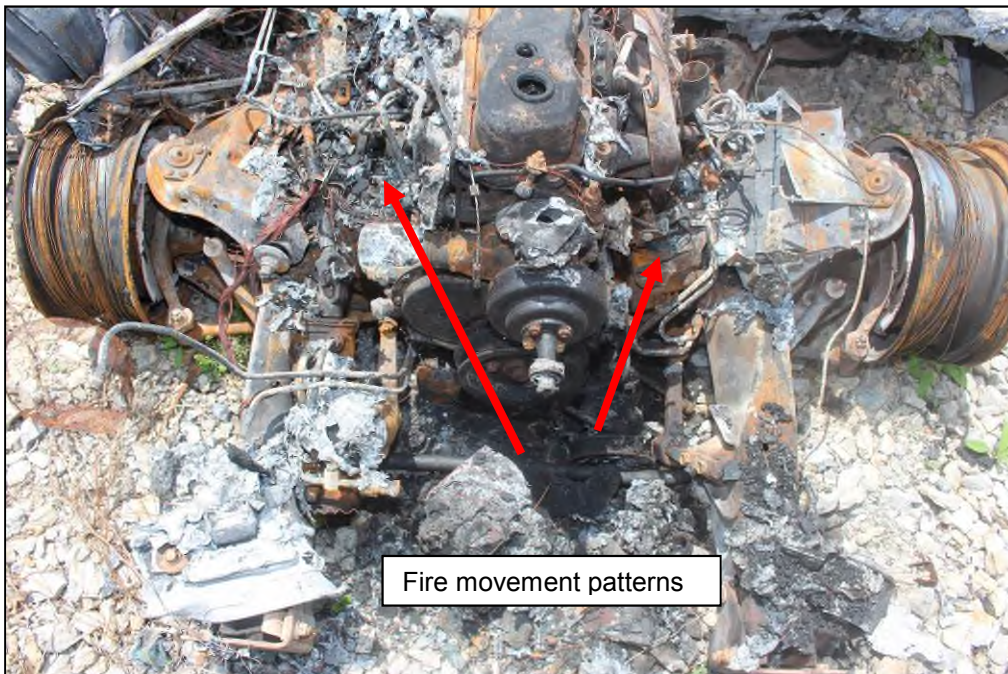
Photograph 1

View of the vehicle from the front right corner.



Photograph 2

Front view of the engine compartment.



July 10, 2017
RCG File No. 53502859

Photograph 3

View of right side of the engine compartment.



Photograph 4

View of the left side of the engine compartment.



July 10, 2017
RCG File No. 53502859

Photograph 5

A view of the LLV at the time of the fire.



Photograph 6

The engine compartment following the fire.



July 10, 2017
RCG File No. 53502859

Photograph 7

The LLV at the time of the fire.



Photograph 8

The engine components collected; observe the mechanical damage to the pulley.



July 10, 2017
RCG File No. 53502859

CVs



Philip M Noah, IAAI-CFI Fire Consultant

Mr. Noah is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson investigators and a Certified Fire Investigator (CFI) in the State of Missouri. Mr. Noah is a licensed Private Investigator in the State of Arkansas; Mr. Noah is a licensed Private investigator and licensed Private Fire Investigator in the State of Missouri. Mr. Noah has over 27 years of experience in fire suppression operations, fire/explosion investigations, technical rescue, hazardous material incidents, fire code enforcement, and building construction plans review. He has lead or assisted in the origin and cause of more than 300 fire and explosion investigations. As a fire investigator he conducted origin and cause investigations on fatal structure fires, residential fires, commercial fires and vehicle fires.

Mr. Noah held the position of Fire Marshal with the Springfield Mo Fire Dept. from 2009 to 2015. As a Fire Marshal Mr. Noah served as a public safety bomb technician on the Springfield Mo. Bomb squad, and was a founding member of the Greene County, Missouri Arson task force, during this time he worked closely with the FBI and ATF. While in this position he also performed hundreds of building plans reviews looking for International Fire Code compliance. Mr. Noah has testified and been qualified as an expert in court proceedings pertaining to fire origin and causation.

Mr. Noah has instructed courses in fire scene evidence preservation, explosives awareness and fire investigation awareness for the insurance industry.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Missouri State University - General education and Chemistry
Drury University - Law Enforcement Academy
Certified Fire Investigator: IAAI (Tested)
Licensed Private Fire Investigator: State of Missouri
Licensed Private Investigator: State of Missouri
Certified Fire Investigator: State of Missouri (Tested)
Class "A" Peace officer license: State of Missouri (Tested)
Certified Firefighter 1&2: State of Missouri (Tested)
Certified Fire Officer 1&2: State of Missouri (Tested)
Certified Fire Inspector: State of Missouri (Tested)
Certified Fire Inspector 1&2: International Code Council (Tested)
Certified Bomb Technician: Federal Bureau of Investigation (Tested)
Certified Fire Service Instructor: State of Missouri (Tested)
Certified Major Crimes Investigator: Springfield Mo Police Department (Tested)
International Association of Arson Investigators, 2010- Present
Missouri Professional Fire and Fraud Investigators (past)
International Association of Fire Fighters (past)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
13900 Alton Parkway Suite 123
Irvine, California 92618
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

November 27, 2018

Re: RCG File No: 71807367
LLV Number: 3303373
VMF Location: 1900 West Redlands Boulevard San Bernardino, California
Subject: Preliminary/Final Report

Dear

On October 15, 2018, a fire involving a US Postal Service LLV 330337. The vehicle was manufactured by Grumman in 1993, model LLV-91 RH. We were retained to examine LLV 3303373 with VIN 1GBCS10A7P2911256 at the VMF located at 1900 West Redlands Boulevard in San Bernardino, California.

In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on October 25, 2018. The vehicle examination was conducted by Fire Consultant Gerard Kenny, IAAI-CFI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the interior compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the wiring clamp attached to the emergency brake handle alongside of the steering wheel column.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the wiring at the clamp on the emergency brake handle. This wiring chaffed over time allowed the energized conductor to come into contact with the metal clamp on the e-brake handle. This event allowed the conductor to overheat and ignite adjacent combustibles.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. Minor fire damage was observed to the engine compartment of the vehicle. The doors to the interior compartment had severe fire and smoke damage which was caused by the fire which originated in the interior compartment. The mail side door of the interior compartment was missing and the remains of the door were found in the cargo area. The front grill and lights of the LLV were observed to be intact with no fire damage.

Severe heat damage was observed to the cargo area. The aluminum roof of the vehicle that covered the interior compartment had melted as a result of the fire. The front fenders were observed with slight fire damage. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured.

Interior Inspection:

The interior compartment had sustained severe fire damage. The most severe fire damage and mass loss was observed to the dashboard area, firewall, and steering wheel assembly. An analysis of the fire patterns indicated that the fire originated in this area at or around the emergency brake handle located on the right side of the steering wheel. The firewall between the engine compartment and the operator compartment was observed with severe mass loss from the fire extending from the interior compartment into the engine compartment.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine. Minor fire damage was observed within the engine compartment. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. Examination of the standard ignition coil revealed that it had

sustained external heat damage, but for the most part it was intact and eliminated as the cause of the fire. The battery for the vehicle was located at the front right side of the engine compartment. The battery, battery terminals, and battery cables were examined and found to be externally heat damaged but intact with no adverse electrical activity observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid, and brake fluid were examined and observed to be within their normal operating range.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

Examination of the fuse panel revealed severe fire damage to the panel and all of the fuses. The plastic housing of the fuse panel was melted, encasing all of the fuses and connections.

Area of Fire Origin:

Based on the observed patterns of fire damage and following a systematic evaluation of the remaining physical evidence, it was determined that the fire originated in the interior compartment on the right side of the steering wheel column at the wiring clamp on the parking brake handle.

Potential Contributing Factors:

The vehicle reportedly was being driven at the time of the fire. An electrical arcing event at the conductors passing through the wiring clamp on the emergency brake handle caused the conductor to heat and ignite surrounding combustible materials.

Evidence Collected:

No evidence was collected for laboratory examination.

Interviews:

In an interview with the driver of the LLV, stated that he was driving and heard a “popping” noise followed by sparks coming from the dashboard of the vehicle at the location of the e-brake handle. He saw smoke coming out from under the dashboard and tried to extinguish the fire with a water bottle. He pulled the vehicle over to the side of the road and called 911.

Service Records:

A review of the provided service records for the involved LLV was conducted. According to VMF Manager, the engine in the LLV was replaced in January of 2018. There was work performed on the e-brake wiring in March of 2018. Transmission repairs and other work were performed on the LLV in September of 2018. It is inconclusive if the maintenance performed contributed to the chaffing of the wiring or the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gerard A. Kenny

Gerard A. Kenny, IAAI-CFI, NAFI-CFEI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

November 27, 2018
RCG File No. 71807367

Photograph 1
1993 Grumman LLV 3303373.



Photograph 2
Fire damage to interior compartment.



Photograph 3

Electrical activity on wiring in dashboard area (red arrow).



Photograph 4

Electrical activity on wiring in dash area (red arrow).



Photograph 5

Electrical activity at clamp on e-brake handle.



Photograph 6

E-brake conductors and clamp on exemplar vehicle.



November 27, 2018
RCG File No. 71807367

Curriculum Vitae



GERARD A. KENNY, IAAI-CFI, NAFI-CFEI FIRE CONSULTANT

Mr. Kenny is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and Certified Fire and Explosion Investigator (NAFI-CFEI) with the National Association of Fire Investigators.

He received a National Certificate in Industrial Engineering from Regional Technical College in Galway, Ireland. Mr. Kenny has personally worked over 1,300 fire and explosion investigations. Mr. Kenny has acted as an expert witness and is licensed as a Private Investigator in CA, OR and WA. His forensic experience includes investigations of fire and explosion incidents in industrial, commercial, residential structures, vehicle, boats/vessels, and marinas. His areas of expertise include fire scene analysis, evidence, data collection, monitoring of destructive and non-destructive testing, investigative interviews, scene photography, and ICC and NFPA fire code compliance.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

International Association of Arson Investigators (IAAI)- Certified Fire Investigator
Certified Fire and Explosion Investigator (CFEI) - National Association of Fire Investigators
Special Commission Fire/Arson Investigator King County Sheriff's Office, Seattle, Washington
Basic Law Enforcement Academy at Washington State Criminal Justice Training Center
Illinois State Fire Marshal Fire/Arson Investigator Certification.
Emergency Medical Technician-Basic Certification, Chicago, Illinois
Firefighter II Certification, Chicago Fire Academy, Chicago, Illinois
Regional Technical College National Certificate in Industrial Engineering, Galway, Ireland

EMPLOYMENT HISTORY

2017 – Present	Rimkus Consulting Group
2015 – 2017	Envista Forensic Consulting Services
2007 – 2015	King County Sheriff's Office, Seattle, WA
2004 – 2007	Rayburn Fire Scene Investigations
1996 – 2007	Chicago Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
92 South Street
Hopkinton, Massachusetts 01748
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

November 26, 2018

Re: RCG File No: 44804024
LLV Number: 3303429
VMF Location: 55 Corliss Street Providence, Rhode Island
Subject: Preliminary/Final Report

Dear

A fire reportedly occurred on October 11, 2018, involving US Postal Service LLV 3303429 with VIN 1GBCS10A2P2911293. The fire incident reportedly occurred on October 11, 2018, at 59 Yale Drive in Coventry, Rhode Island. The vehicle was last operated by carrier Nicholas Lomastro.

Rimkus Consulting Group, Inc. was retained to examine the vehicle and determine the origin and cause of the fire. This LLV was manufactured by General Motors in 1983 with a GM chassis and an AM General body. This report was prepared by Fire Investigator Shawn Brecken and reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

In the course of our work, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the area of the center of the dashboard in the area of the windshield defroster fan motor and related electrical components.
2. The specific area of origin could not be conclusively determined at the time of our examination due to the severe fire damage to the interior dashboard area and the

engine compartment and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the dashboard area and the lack of remaining physical evidence for examination.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a counterclockwise direction. We observed that most of the vehicle structure in the interior compartment had been consumed by fire. We observed the bulkhead of the vehicle sustained substantial fire damage near the center of the vehicle. The roof over the drivers' area had severe fire damage and mass loss. We observed mass loss of the hood over the engine compartment of the vehicle. There was no evidence to indicate that the LLV had recently been involved in a collision.

At the time of the exam, we observed the two front tires had been damaged by the fire. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. Both front doors had been consumed by fire. Both the driver's door and the mail side doors were open. The cargo door was unlocked and in the open position.

No damage was observed to the exterior cargo area of the vehicle with the exception of blistered paint on the roof corresponding with fire spread from the direction of the engine and operator compartments. Based on the fire patterns observed, it was determined the fire initiated within the interior compartment near the bulkhead/dashboard then progressed throughout put the interior and into the engine compartment through the windshield and bulkhead.

Interior Inspection:

The interior compartment sustained severe fire and heat damage. Most of the combustible materials located within this area were consumed by the fire, including the fuse panel and various electrical conductors in the dashboard area on the driver's side. Fire patterns indicated this was the result of the fire's extension from the bulkhead/dashboard in the center area. The most severe damage was observed on the mail side of the compartment, where the bulkhead had completely burned through from the direction of the engine compartment. The bulkhead was less severe on the driver's side. The bundled wiring harnesses on the driver's side connecting from the fuse panel towards the Engine Control Module (ECM) sustained severe fire damage. The ECM had been positioned in the center of the dashboard and was observed with severe fire

damage. The burn through hole in the bulkhead was observed to the left of the ECM. The remnants of an electric fan was found in the fire debris along the burned through area of the bulkhead.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2 four-cylinder engine. The engine was fuel injected with 4 separate fuel injectors. The standard ignition for this engine was a high output ignition coil.

The battery for the vehicle was located at the front right side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be fire damaged but intact; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire.

The engine compartment was observed with severe fire damage. Burn patterns indicated the fire originated near the bulkhead on the mail side of the vehicle. We observed burn patterns on the mail side of the engine extending upward from the exhaust manifold.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle, except for a limited area below the rear of the engine compartment that appears to have been caused by drop down from above. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head. All four tires were intact.

Fuse Panel Inspection:

The fuse panel positioned behind the instrument panel in the dashboard on the driver's side sustained severe fire damage and mass loss. However, no evidence of adverse electrical activity was noted. The respective wiring harness associated with the fuse panel was inspected and did not reveal any unexpected damage from a fire with this intensity.

Area of Fire Origin:

The area of origin was in the area of the dashboard and defroster fan motor and related electrical components. The driver stated that he noticed smoke coming from the

defroster vent near the left of the driver's side. He also noticed a wire that had melted and was hanging near his left foot while he was stopped. He stated that he had the defroster on "high" because the windshield was fogging up. This was the first time he had run the defroster in 3 or 4 months.

Potential Contributing Factors:

An unknown adverse electrical event involving the defroster fan motor and related electrical components may have contributed to the cause of the fire.

Evidence Collected:

No evidence was collected.

Interview:

The carrier stated that he was doing his route when the windshield started to fog up due to the weather. He had put the defroster on "high" and had been using it on this setting most of the day. He noticed smoke coming from the defroster vent near the middle of the windshield on the driver's side. When he pulled over, he saw flames in the same area. The windshield cracked from the heat and the fire engulfed the interior area. The carrier stated that this was the first time he had to use the defroster this season. The carrier stated that he noticed a wire hanging down near his left foot during the day, he also stated that the vehicle was "rough idle" just prior to the fire.

Service Record:

Service records were obtained and reviewed. The ignition control module replacement was conducted on or about September 7, 2018. The last preventive maintenance was completed on September 10, 2018. Recent service or repairs completed on this vehicle may have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Shawn P. Brecken

Shawn P. Brecken, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

November 26, 2018
RCG File No. 44804024

Photograph 1
Front of vehicle.





November 26, 2018
RCG File No. 44804024

Photograph 3
Driver's side.



November 26, 2018
RCG File No. 44804024

Photograph 4
Mail side of subject LLV.



November 26, 2018
RCG File No. 44804024

Photograph 5
Driver's compartment.



Photograph 6
Cargo area.



November 26, 2018
RCG File No. 44804024

Photograph 7
Dashboard area



Photograph 8
Battery



November 26, 2018
RCG File No. 44804024

Photograph 9
Area of origin.



November 26, 2018
RCG File No. 44804024

Curriculum Vitae



SHAWN P. BRECKEN EMT, CFI, CFIE, CVFI FIRE CONSULTANT

Mr. Brecken's professional career includes 35 years with the Marlborough Fire Department in the City of Marlborough, MA. In that capacity he has been involved in many different emergency services including IAAI Certified fire investigator and front line supervisor. His duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Brecken has an Associate Degree in Fire Science from Quinsigamond Community College. He maintains certifications as a fire investigator.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.S – Fire Science - Quinsigamond Community College
EMT – Emergency Medical Technician
CFI – Certified Fire Investigator – IAAI
CFIE – Certified Fire Explosive Investigation - NAFI
CVFI - Certified Vehicle Fire Investigator NAFI
MA CFI- Certified Fire Investigator
International Association of Arson Investigator – Member
National Association of Fire Investigators – Member
International Association of Arson Investigator, MA Chapter – Member
Metro Fire/Arson Investigation Association – Member

EMPLOYMENT HISTORY

2017 – Present	Rimkus Consulting Group, Inc.
1984 – 2017	Marlborough Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road SE
Suite 224
Atlanta, Georgia 30339

Certificate of Authorization No. PEF002580
Certification Expiration Date 2020-06-30

May 21, 2019

Re: RCG File No: 100000021
LLV Number: 3304957
VMF Location: 3900 Crown Road SW Atlanta, Georgia
Subject: Preliminary/Final Report

Dear

On April 12, 2019, a fire occurred involving a US Postal Service vehicle at 3201 Grant Estates Drive in East Point, Georgia. On April 17, 2019, we inspected the 1993 LLV 3304957, VIN 1GBCS10A6P2912818, at the Atlanta Vehicle Maintenance Facility located at 3900 Crown Road SW in Atlanta, Georgia.

In the course of our work, inspected the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Gregory M. Cloer, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at a high pressure brake line.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of damage to a high pressure brake line. The resulting damage allowed atomized brake fluid to escape from the high pressure brake line. The atomized brake fluid was ignited by the hot surface of the exhaust system located below the damaged area of the high pressure brake line.

Observations

Exterior Inspection:

Inspection of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Fire movement patterns were observed extending from the engine compartment to the interior compartment and roof of the LLV. Most of the roof above the interior and cargo compartments and most of the sides of the vehicle had been consumed during the fire event.

Interior Inspection:

Inspection of the interior of the vehicle revealed that most of the combustible materials within the interior compartment and the bulkhead had been consumed during the fire event. The rear cargo compartment had sustained severe fire damage.

Engine Compartment Inspection:

The engine compartment was inspected. The vehicle was equipped with a 2.5L four-cylinder engine. The vehicle was also equipped with a fuel injected throttle body and electronic ignition. The most severe fire damage was observed in the engine compartment along the mail side of the engine. The battery had sustained severe fire damage and was located in the fire debris that was placed in the cargo compartment after the fire event. The electrical conductors in the engine compartment were examined. There was no adverse electrical activity observed on the electrical conductors within the engine compartment.

The engine oil and transmission fluid were examined and observed to be within their respective normal operating ranges. The fuel system was an AC Delco model.

Damage was observed to one of the two high pressure brake lines. The high pressure brake lines extend across the top of the engine. The damaged area to the high pressure brake line was located near the manufactured bend of the line along the mail side of the engine and directly above the exhaust manifold.

Undercarriage Inspection:

Inspection of the undercarriage revealed no fire patterns extending from underneath the vehicle. The LLV was mounted on a GM frame and had sustained some damage to the left frame rail below the engine. This damage is consistent with the fire originating below the high pressure brake lines. The high pressure brake lines extended along the rear side of the engine. The fuel tank and fuel lines along the frame rail did not show any signs of failure. The exhaust system was intact. The transmission had sustained fire damage in the area above the exhaust manifold. The transmission did not reveal any leaks.

Fuse Panel Inspection:

Inspection of the fuse panel revealed that it sustained severe fire damage. All of the fuse panel combustible materials had been consumed during the fire. The electrical conductors and their connectors were observed with no adverse electrical event. The fuse panel was eliminated as the origin of the fire.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence it was determined that the fire originated within the engine compartment. The specific area of origin was at the high pressure brake line.

Potential Contributing Factors:

Mechanical damage to the high pressure brake line may have contributed to the failure of the line and resulting fire.

Evidence Collected:

No physical evidence was retained.

Interview:

The interview of the carrier was not conducted. The carrier information was not provided.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were recent repairs and service that may have contributed to the cause of the fire.

May 21, 2019
Rimkus File No. 100000021

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

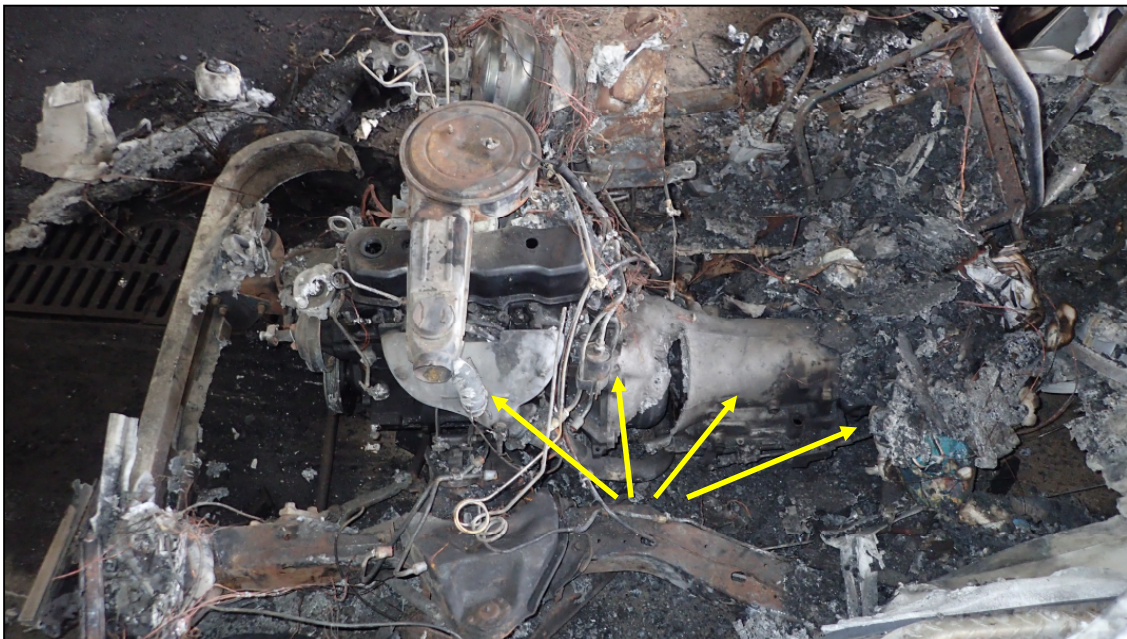
Photograph 1

View of the front exterior.



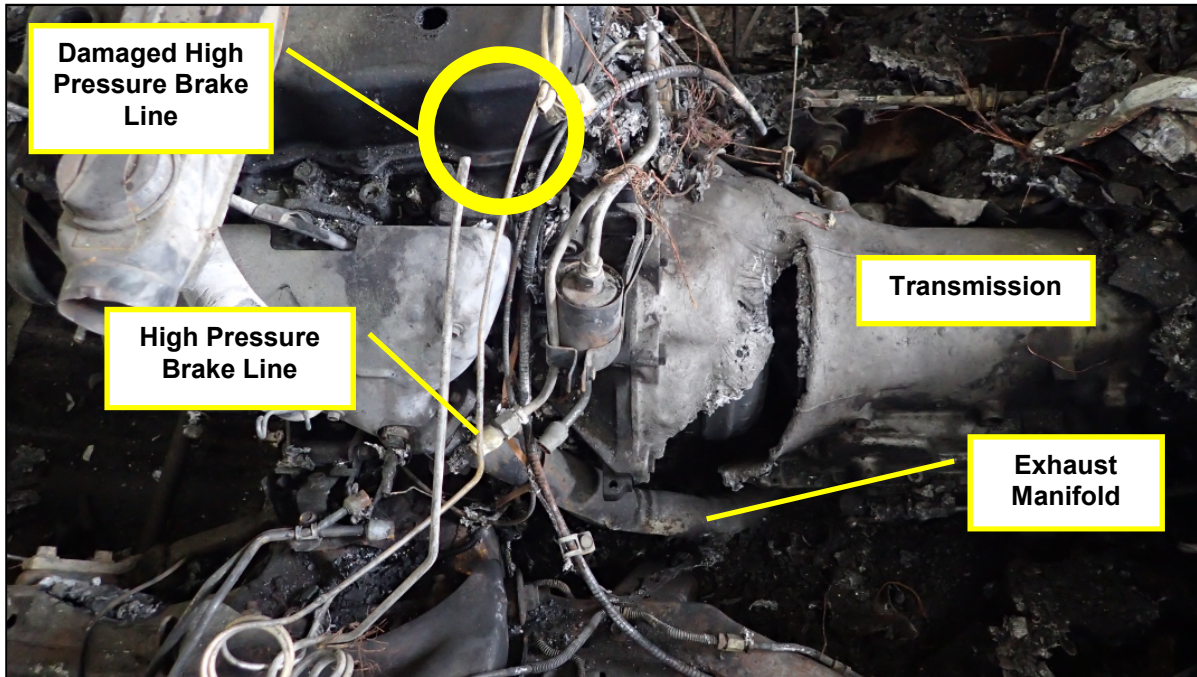
Photograph 2

View of the fire movement patterns in the engine compartment.



Photograph 3

View of the damaged high pressure brake line and fire damage to the transmission.



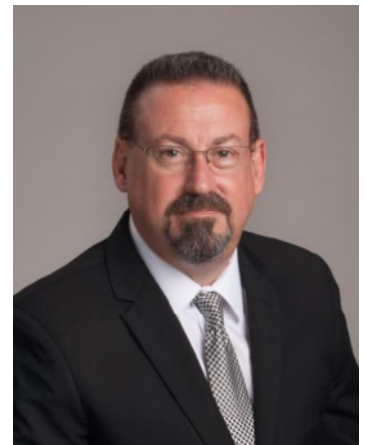
Photograph 4

View of the damaged high pressure brake line.



May 21, 2019
Rimkus File No. 100000021

Curriculum Vitae



Gregory M. Cloer, CFI

Fire Consultant
Fire Division

Background

Mr. Cloer is a Certified Fire Investigator through the International Association of Arson Investigators and National Professional Qualification, a Certified Arson Investigator through Georgia Peace Officer Standards and Training Council (P.O.S.T.) and certified for fire/arson investigation through the National Fire Academy. He was certified by Georgia P.O.S.T. as a basic peace officer and served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting and prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator.

Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. He has testified as an expert in criminal and civil courts related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

Contact Information

(770) 436-9399

gcloer@rimkus.com

2030 Powers Ferry Road SE,
Suite 224
Atlanta, GA 30339

Professional Engagements

- Fire/Arson Investigations
 - Metro Arson Task Force – Atlanta, GA (2001-2015), Part of the task force, spearheaded by Bureau of Alcohol, Tobacco, Firearms, and Explosives, that conducted criminal investigations of arson cases in metro Atlanta.
 - Multiple Commercial Building Fires Task Force – Cobb County, GA (2007-2009), Worked with Bureau of Alcohol, Tobacco, Firearms, and Explosives to investigate three grocery/retail buildings set on fire in the space of two hours. Established localized task force that required investigation of suspect.
 - Cobb County Community – Cobb County, GA (2000-2015), as fire investigator for county, investigated fire-related events in the County.
- Expert Testimony
 - Fulton County, GA (2018), structure fire
 - Cobb County, GA (2016), vehicle fire

Forensic Engagements

- Fire/Explosion Investigations
 - Florida, Georgia – Passenger and commercial vehicles, parked and moving.
 - Georgia – Passenger vehicle arson fire
 - Florida, Georgia, Tennessee – Residential and commercial building investigations to determine the origin and cause of the fire.
 - Georgia – Fire loss inside high-rise condominium
 - Georgia (2016), Dry docked recreational boat fire
 - Georgia – Multiple heavy equipment investigations of tractors, logging equipment, and accumulator to determine the origin and cause of the fire.
 - Georgia – Investigation of residential and commercial building fires involving fatalities.

Professional Experience

- Rimkus Consulting Group, Inc. 2015 - Present
 - Fire Consultant – Fire Division
Conduct fire, arson, and explosive investigations including residential, commercial, and vehicular losses for clients. Collect and preserve evidence ensuring a precise chain of custody. Conduct interviews with victims, property owners, witnesses, investigators, and pertinent third party organizations. Photograph scenes and prepare detailed written investigative reports as to the conclusions and opinions of the subject loss. Testify in related depositions and trials.
- Cobb County Fire and Emergency Services 1986-2015

- Fire Investigator Technician/Fire Investigator (2000 – 2015)

During this time frame, passed probationary period of Fire Investigator Technician and became a Fire Investigator. Responsible for determining the cause and origin for fires, documenting fire scenes with use of photographs, diagrams, interviews, and written reports, collecting and securing evidence, documenting chain of custody, and submitting samples for laboratory analysis. Responsible for conducting surveillance, applying for affidavits and search/arrest warrants, and testifying in related depositions/trials. Monitored and tracked information through databases for identifying and evaluating unusual trends or products that could threaten life or property. Investigated fire/explosion cases, structure and vehicle fires, wildland fires, arson fires, and fire fatalities. Studied cause/effects of lateral fire spread in the Silent Floor System in residences.

- Fire Engineer (1995 – 2001)

Responsible for driving fire apparatus, coordinating pumping operations, and acting as fire officer on fire scenes.

- Firefighter (1986 – 1995)

Responsible for responding to fires, medical calls, and assist calls. Certified as an Emergency Medication Technician and licensed as a Paramedic during this time as well.

Education and Certifications

- Private Investigator License: Georgia, Florida, Tennessee
- Basic and Advanced Arson Investigation (Currently Fire Investigator I and II) Certification: Georgia Peace Officer Standards and Training Council (P.O.S.T.)
- Basic Peace Officer Certification: Georgia Peace Officer Standards and Training Council (P.O.S.T.)
- Fire/Arson Investigation: National Fire Academy
- Arson Investigator: Georgia Peace Officer Standards and Training Council (P.O.S.T.)
- Certified Fire Investigator: International Association of Arson Investigators
- Certified Fire Investigator: National Professional Qualification
- Fire Instructor: National Professional Qualification

Presentations

- “Profile of the Serial Offender – [Serial Arsonists].” Kennesaw State University, Criminal Justice Program, Oct. 28, 2006, Sept 9, 2007, Sept. 6, 2008, Sept. 25, 2010, Aug. 10, 2011, Nov. 1, 2011, Dec. 15, 2011, May 20, 2013, Jan. 25, 2014 and Feb. 13, 2015
- “Arson Case Study.” Kennesaw State University, Criminal Justice Program, Sept. 12, 2009
- “Profile of the Serial Offender” – [Serial Arsonists].” Reinhardt University, Criminal Justice Program, Feb. 1, 2012.



Rimkus Consulting Group, Inc.
8100 S. Akron Street, Suite 320
Centennial, Colorado 80112
(720) 488-8710 Telephone
(720) 488-8670 Facsimile

December 7, 2018

Re: RCG File No: 01608968
LLV Number: 3305048
Inspection Location: 2130 Big Horn Avenue Cody, Wyoming
Preliminary/Final Report

Subject: Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 3305048, VIN 1GBCS10A6P2912981. The vehicle was identified as a 1993, ½ ton, Grumman, LLV, with a 2.5L, type A 4 cylinder engine. It was reported that the fire occurred on October 15, 2018, at 2821 Rocky Road in Cody, Wyoming. Fire Consultant Joseph R. Filas, IAAI-CFI, inspected and photographed the fire-damaged vehicle on November 8, 2018. At the time of inspection, the vehicle was located at Bearco.

In the course of our work, we inspected the vehicle, reviewed repair and maintenance history, and interviewed the carrier Margaret Denvir. This report was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated within the steering column components of the involved LLV.

2. The specific area of origin was at and around a battery cable routed through the area of fire origin that sustained severe adverse electrical damage.
3. The specific ignition sequence and cause of the fire was determined to be the within the steering column components when the steering shaft was electrically energized by direct contact with the unfused battery hot lead. This adverse electrical event at the steering shaft followed electrical ground paths in the steering column assembly, generating high localized heat in the process.
4. Wear and degradation of components allowed an unfused adverse electrical event to develop at the battery hot lead where it was in direct contact with the steering shaft and parking brake bracket.

Observations

Exterior Inspection:

Examination of the vehicle began at the front of the vehicle and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The vehicle sustained no visible exterior fire damage.

Interior Inspection:

The interior compartment sustained no interior fire damage, except to the steering column and the area of the dashboard on the driver's side. The fire damaged steering column was examined at the Bearco facility.

The interior compartment sustained only minor soot particulate accumulation at the dashboard in the vicinity of the steering column. Residue of dry chemical extinguishing agent was also present in the vicinity of the steering column location.

There was no fire damage to the cargo area.

Steering Column Inspection:

Examination of the fire damaged steering column was conducted. During the exam, evidence of an adverse electrical event was observed showing observable indications of electrical current to the steering column components including a small gauge wire going

to the heater fan in direct contact with the steering column and the parking brake bracket.

The electrical wiring harnesses contained on the steering column was observed intact and plastic wire insulation was not damaged and no adverse electrical activity was observed within the wiring harness.

During the examination of the steering shaft, a section approximately one inch wide, where paint on the steering shaft was worn away from contact with the battery hot lead was observed. Rotating the steering shaft, evidence of electrical arcing was observed corresponding to the electrical activity observed to the battery hot lead and the parking brake bracket.

Engine Compartment Inspection:

An inspection of the engine compartment was conducted. Minor fire damage occurred in the engine compartment on the right side. The fire damage was limited to a small gauge conductor that was routed from the negative battery terminal to the ground connection to the front right side frame.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle, except for a limited area below the rear of the engine compartment that appears to have been caused by drop down from above. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head. All four tires were intact.

Fuse Panel Inspection:

The interior compartment fuse panel was inspected. All fuses were intact with the exception of the 5 ampere fuse labeled INST LPS (Instrument Panel Lamps). The 5 ampere fuse was observed blown.

Area of Fire Origin:

The fire originated within the interior dashboard to the right of the steering column. There was no fire communication between the fire damage in the interior dashboard and the fire damage in the engine compartment. Witness statements provided by Margaret Denvir indicated that the only fire discovered was a fire burning in the interior compartment at the steering column. It is possible that the fire damage that occurred in the engine compartment occurred prior to the fire in the interior compartment and was not noticed.

Potential Contributing Factors:

On the interior, evidence of arcing occurred at a conductor that was routed over the steering wheel and parking brake bracket. The conductor was arc severed. The flexible heater duct with helicol metal wire was routed over the steering wheel and parking brake bracket. This caused the conductor between the heater duct and the steering wheel and parking brake bracket to chaff the conductor insulation that resulted in electrical arcing.

In the engine compartment, evidence of arcing occurred at a small gauge conductor that was routed from the negative battery terminal to the ground connection at the front right side frame. The conductor was arc severed. Since there is no fire communication between the interior compartment and engine compartment, it was inconclusive if the electrical connection between the arcing at the conductor in the interior compartment and the arcing on engine compartment ground conductor are related, or if the arcing at the engine compartment ground conductor was a separate event.

Evidence Collected:

No evidence was collected during our inspection of the vehicle.

Interview:

The carrier stated that she was operating the vehicle in the Green Acres Trailer Park when the vehicle stalled. She then observed smoke coming from the dashboard area. She removed the mail and called 911. A passerby used a fire extinguisher on the interior of the vehicle only. No fire was observed in the engine compartment at that time.

Service Records:

Service records going back one year were obtained and reviewed. Below is a listing of the most current repairs performed on LLV 3305048:

- October 25, 2018 - Repairs made in the area of the steering column and the heater was bypassed.
- September 14, 2018 - Preventive Maintenance was last performed.
- September 10, 2018 - The headlight switch was replaced in the dashboard.

Based on the review of the service records, recent service or repairs may have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Joseph R. Filas

Joseph R. Filas, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

December 7, 2018
RCG File No. 01608968

Photograph 1

The exterior of LLV 3305048.



Photograph 2

Rear and mail side.



Photograph 3

The interior area, observe the only fire damage to the steering column area.



Photograph 4

The interior of the passenger compartment, the fire originated to the right side of the dashboard to the right of the steering column.



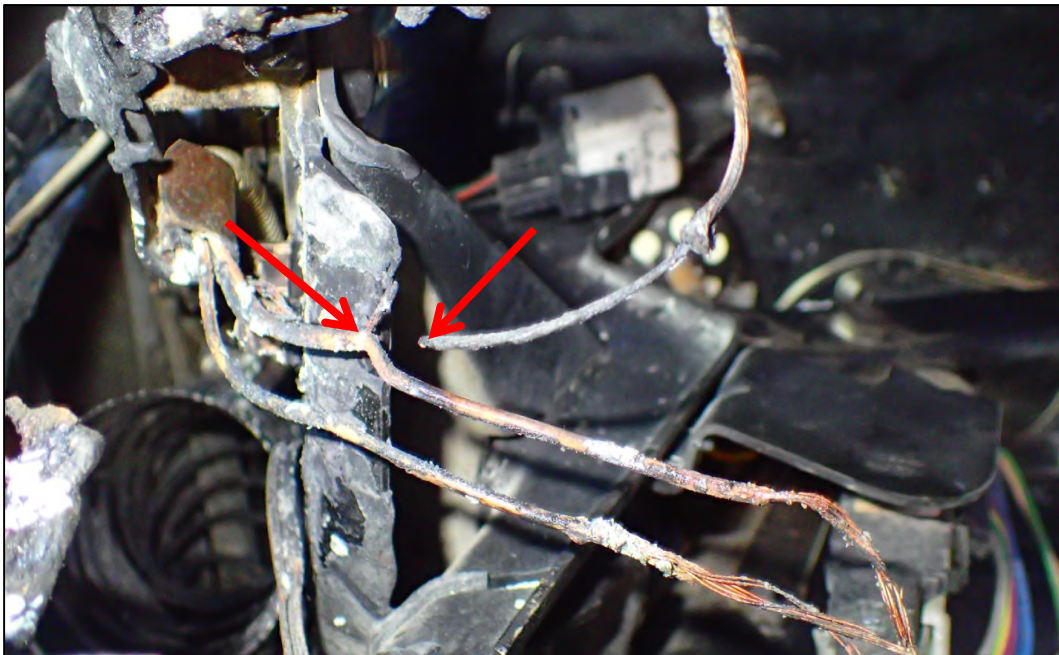
Photograph 5

The engine compartment, fire damage occurred at the right side to a ground conductor.



Photograph 6

The evidence of electrical arcing of a conductor (red arrows) that was routed over the steering and parking brake bracket.



Photograph 7

The ground conductor coming from the battery with evidence of electrical arcing (red arrows).



Photograph 8

Pre-fire mechanical damage observed to the wiring showing wear and tear.



December 7, 2018
RCG File No. 01608968

Curriculum Vitae



**JOSEPH R. FILAS, B.S., C.F.I., C.F.E.I., C.F.I.
FIRE CONSULTANT**

Mr. Filas is a graduate from Eastern Kentucky University with a Bachelor of Science in Fire and Safety Technology, with an emphasis in Fire, Arson, and Explosion Investigation. He is a Certified Fire and Explosion Investigator (C.F.E.I.) through N.A.F.I., a Certified Fire Investigator (C.F.I.) through I.A.A.I., and a Certified Fireplace Inspector through F.I.R.E. He has completed numerous educational seminars and continuing education courses. In addition to his educational achievements, he has experience in origin and cause investigations, researching fire code violations, and assisting with failure analysis of appliances. He has conducted fire and explosion investigations that include commercial, residential, and automotive. He has testified at depositions and trial, pertaining to his findings.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S., Fire and Safety Technology, Emphasis - Fire, Arson, and Explosion Investigation
Eastern Kentucky University - December 1999
Certified Fireplace Inspector (C.F.I.) - Fireplace, Investigation, Research, and Education Service,
November 2008 - Certificate Number: FP-194
Certified Fire Investigator (C.F.I.) - International Association of Arson Investigators
October 2006 - Certificate Number: 08-090
Certified Fire & Explosion Investigator (C.F.E.I.) - National Association of Fire Investigators
April 1999 - Certification Number: 6651-2287
Fire Investigator – IAAI-CFI - National Board on Fire Service Professional Qualifications
October 2007 - Certificate Number: 302566
International Association of Arson Investigators – I.A.A.I. – Member
International Association of Arson Investigators – I.A.A.I. – Colorado Chapter - Member
National Association of Fire Investigators – N.A.F.I. – Member
Licensed Private Detective - Arizona
Licensed Private Investigator – Montana, Nevada, Washington

CONTINUING EDUCATION

- Prevention and Investigation of Commercial Kitchen Fires, International Code Council, Phil Ackland & Associates – March 2016
- 65th IAAI International Training Conference, IAAI, April 2014
- Fundamentals of Residential Building Construction, CFITrainer.net, October 2011
- Documenting the Event, CFITrainer.net, October 2011
- Investigating Solid Fuel-Burning Appliance Fires, Fire-Findings, October 2011
- Fundamentals of Interviewing, CFITrainer.net, August 2011
- Deposition and Trial Testimony Training, Rimkus Consulting Group, Inc., February 2010
- Fireplace Inspection, FP-01/FP-02/FP-03, Fireplace Investigation, Research, & Education Service, November 2008
- Investigation of Gas and Electrical Appliance Fires, Fire-Findings, November 2006
- CFI, Testimony Course, IAAI - Texas Chapter, January 2006
- 41st Southeastern Arson Seminar, Georgia Fire Investigators Association – IAAI, August 2005



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
Syracuse City Center, Suite 712
499 South Warren Street
Syracuse, New York 13202
Telephone: (800) 961-8785
Certificate of Authorization No. 13387
Certification Expiration Date August 31, 2019

September 11, 2019

Re: RCG File No: 100010591
LLV Number: 3305678
VMF Location: 16500 Chagrin Boulevard, Shaker Heights, Ohio
Subject: Preliminary/Final Report

Dear

On August 4, 2019, a fire occurred involving a US Postal Service vehicle while being operated on State Route 2 in Mentor, Ohio. The fire involved a 1993 Grumman, USPS LLV 3305678 with the Vehicle Identification Number (VIN) 1GBCS10A7P2913489.

Rimkus Consulting Group, Inc. was retained on August 6, 2019, to determine the origin and cause of the fire. In the course of the work, we examined and documented the fire-damaged vehicle with written notes and digital photographs. Our work to complete this assignment was performed on August 9, 2019, by Craig S. Williams, IAAI-CFI, Fire Consultant. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association NFPA 921 – “Guide for Fire and Explosion Investigations” and NFPA 1033 – “Standard for Professional Qualifications for Fire Investigator”.

Conclusions

1. An effective fire pattern analysis and review of the remaining physical evidence concluded that the 1993 Grumman, USPS LLV 3305678 sustained severe fire, smoke, heat, and water damage.

2. The area of origin was determined to have been located within the engine compartment, on the mail side of the engine.
3. The specific area of origin was determined to have been located at the exhaust manifold on the mail side of the engine.
4. The specific ignition sequence and cause of the fire was determined to have been caused by a catastrophic failure occurring within the engine. Holes were punctured through the engine block by the push rods during the failure. Engine oil was expelled from the engine through those penetrations and the engine oil was ignited by the exhaust manifold.

Observations

Exterior Inspection:

The exterior examination of the fire-damaged vehicle commenced from the front of the LLV and continued in a clockwise rotation. The inspection revealed that the vehicle sustained severe fire damage throughout the LLV. Fire patterns were consistent with a fire that originated within the engine compartment and spread towards the rear of the vehicle.

The mail side of the vehicle sustained the most severe damage in comparison to the driver's side of the vehicle. The majority of the aluminum body on the mail side front fender, engine compartment hood, bulkhead, driver's compartment roof and cargo compartment roof was consumed by the fire. The rear tires were intact and the front mail side tire sustained greater damage as compared with the front driver's side tire.

Interior Inspection:

The interior inspection revealed severe fire damage in the interior (driver's/mail) compartment and moderate fire damage in the cargo compartment. The bulkhead was consumed by the fire at the front of the interior compartment. The remains of several partially consumed packages were located in the cargo compartment.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil.

The engine compartment sustained severe fire damage and the fire appeared to have lasted an extended period of time before being extinguished. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. The most severe

damage to the engine compartment was located on the mail side. All of the combustible items in the engine compartment were consumed by the fire.

No evidence was observed of the fire originating within the brakes, wheel hubs or tires in the area of the engine compartment. These were eliminated as potential causes of the fire.

The engine block was examined and three holes were found in the engine block on the mail side. The two largest holes had the push rods of the corresponding cylinder hanging out of them. These push rods were for engine cylinder #1 and #2. The end of the push rod for cylinder #2 had a greater amount of wear on the exposed end in comparison to the exposed end of the push rod from cylinder #1. The push rod in cylinder #1 had a coating of oil on it and the push rod in cylinder #2 appeared to be dry.

There was a smaller hole with no rod penetrating through it in the area of cylinder #3. This smaller hole was directly behind and in close proximity to the exhaust manifold.

Undercarriage Inspection:

The undercarriage was inspected and fire patterns found along the undercarriage revealed that the fire traveled from the front of the vehicle towards the rear. Fuel lines on the undercarriage were intact. The LLV was mounted on an AM General frame which appeared to be undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The only notable damage found on the undercarriage was holes in the oil pan directly under the engines #1 cylinder. The overall observation was that the fire began above the undercarriage and more specifically within the engine compartment.

Fuse Panel Inspection:

The fuse panel normally positioned in the interior compartment to the right side of the steering column was partially consumed by the fire. The remains of the printed circuit board and several conductors found in that location were examined and no adverse electrical activity was observed on the remains.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated in the engine compartment on the mail side of the engine at the exhaust manifold.

Potential Contributing Factors:

A catastrophic failure of the internal engine had punctured the engine block allowing engine oil to be expelled onto the hot surfaces of the exhaust manifold. The temperature

of the oil increased until it reached its ignition temperature and ignited. The fire then progressed to surrounding combustible materials.

Evidence Collected:

Engine oil was collected from the oil filter and secured as evidence for lab analysis.

Lab Analysis:

The oil sample collected was submitted to Forensic and Scientific Testing (FAST) for analysis. The Certified Laboratory Report stated an increase in iron, aluminum, and silicon was found which indicates cylinder, crank, or cam shaft wear. There were also indications of bearing and/or bushing wear. The test for glycol was negative.

Interviews:

A phone interview with the carrier driving the LLV at the time of the fire, was conducted. Mr. stated that the day of the fire was his first day using the involved LLV. He stated that he had been driving the LLV for approximately 15 minutes prior to the fire and everything seemed to be running fine with no known issues. He stated that he just entered the freeway, Route 2, when he heard a loud bang. He immediately lost power and the readings on the gauges all dropped. He pulled off onto the side of the freeway. Smoke was starting to fill the cab and fire was seen coming from the engine compartment.

Service Records:

Based upon our review of the vehicle's maintenance records on August 9, 2019, the last regular preventative maintenance was performed on April 16, 2019. There were no recent repairs to the LLV that contributed to the catastrophic engine failure and fire. It does not appear that the maintenance that was performed on this vehicle was a contributing factor to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Craig S. Williams

Craig S. Williams, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

September 11, 2019
Rimkus File No. 100010591

Photograph 1
Front of the vehicle.



Photograph 2
Driver's side of the vehicle.

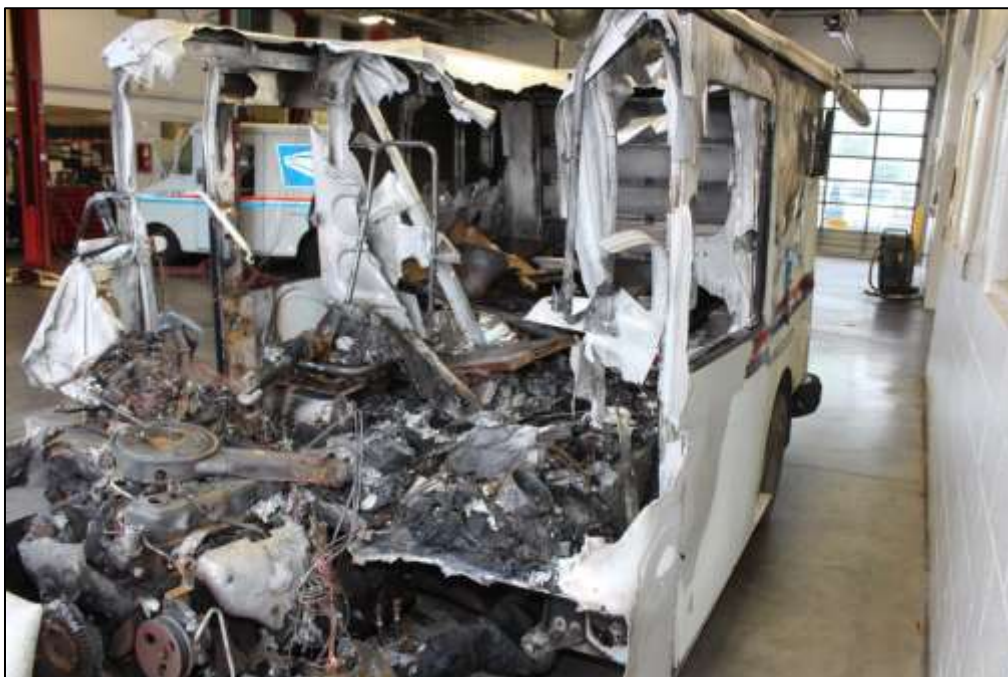


September 11, 2019
Rimkus File No. 100010591

Photograph 3
Rear of the vehicle.



Photograph 4
Mail side of the vehicle.



September 11, 2019
Rimkus File No. 100010591

Photograph 5
Interior compartment.



Photograph 6
Cargo area.



September 11, 2019
Rimkus File No. 100010591

Photograph 7
Engine compartment.



Photograph 8
Undercarriage near the front of the vehicle.



September 11, 2019
Rimkus File No. 100010591

Photograph 9

Undercarriage near the middle of the vehicle.



Photograph 10

Undercarriage towards the rear of the vehicle.



September 11, 2019
Rimkus File No. 100010591

Photograph 11

Dashboard and fuse panel consumption.



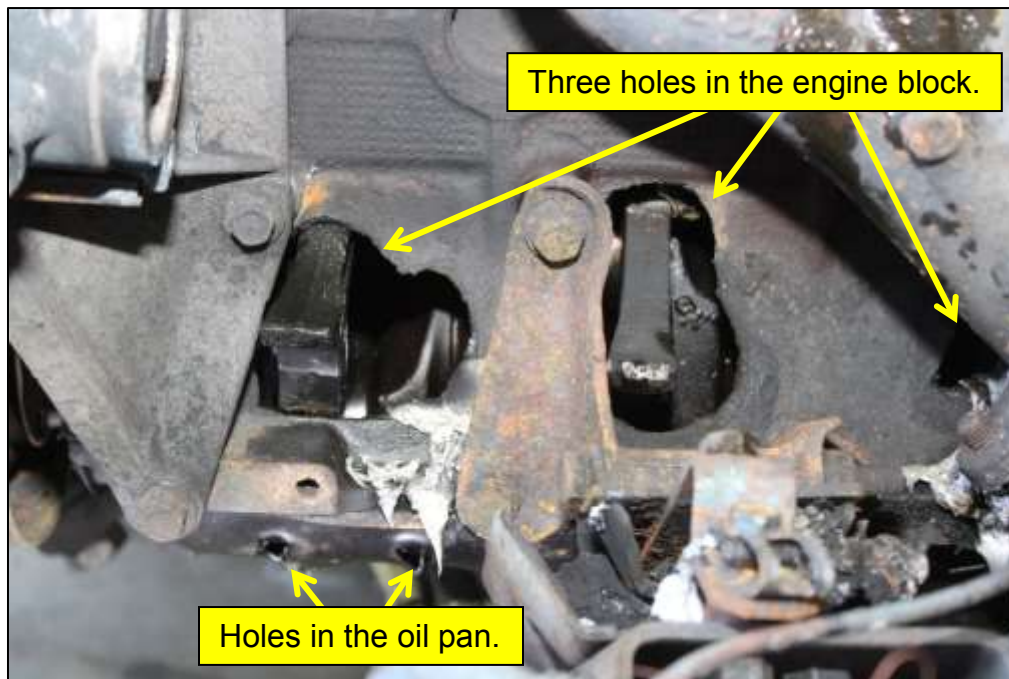
Photograph 12

Area of origin on the mail side of the engine.



Photograph 13

Three holes in the engine block and two in the oil pan.



Photograph 14

Two push rods out the side of the engine block.



September 11, 2019
Rimkus File No. 100010591

Photograph 15

Cylinder #1 push rod.



Photograph 16

Cylinder #2 push rod.



September 11, 2019
Rinkus File No. 100010591

Photograph 17

Holes in the oil pan directly under cylinder #1.



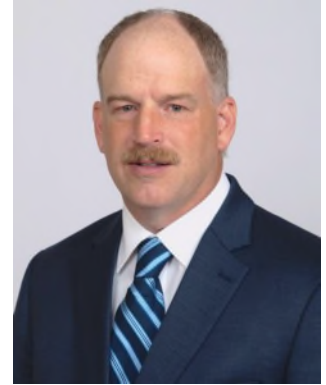
Photograph 18

Oil sample collected from the oil filter for lab analysis.



September 11, 2019
Rimkus File No. 100010591

Curriculum Vitae



Craig S. Williams, CFI, CFEI

Fire Consultant
Fire Division

Background

Mr. Williams is a seasoned specialist in fire, arson, and explosion investigations and also is a licensed private investigator in multiple states. His specific area of expertise is origin and cause fire investigations of residential, commercial, and industrial structures, vehicles, and heavy construction equipment. Other areas of forensic experience include marine fire investigations, large-loss fire investigations, explosion and arson fire investigations, electrical fires, and evidence collection.

Over the last three decades, Mr. Williams acquired his extensive knowledge of the fire service through various roles: Firefighter, Lieutenant, Captain, Interim Fire Chief, Municipal Training Officer, Fire Investigator, and Fire Investigator Team Leader. While serving in the capacity of Municipal Training Officer, he coordinated and instructed several New York State Office of Fire Prevention and Control courses for the City of Batavia Fire Department. These courses covered all aspects of the fire service, including fire investigation.

Mr. Williams has obtained several state, national, and international certifications, including: Certified Fire Investigator (CFI) with the International Association of Arson Investigators (IAAI); Certified Fire and Explosion Investigator (CFEI) with the National Association of Fire Investigators (NAFI); New York State Fire Investigator (Levels I and II); and Certified Fire Investigator (CFI) with the National Board of Fire Service Professional Qualifications (National Pro-Board). He has also completed numerous educational seminars and continuing education courses in the field of fire investigation.

Mr. Williams also spent the early part of his career as an owner/operator of a construction company.

Contact Information

(800) 961-8785

cswilliams@rimkus.com

Syracuse City Center
Suite 712
499 South Warren Street
Syracuse, NY 13202

Professional Engagements

- Fire, Arson, and Explosion Investigations
 - Residential Structure Arson – Batavia, NY (2016), Investigated the origin and cause of a single-family residential structure fire. After determining that the fire was intentionally set, worked in conjunction with the City of Batavia Police Department to arrest and charge an individual with arson.
 - Wiard Plow Warehouse Arson – Batavia, NY (2010), As the Interim Fire Chief, successfully led the City of Batavia Fire Department in containing a large warehouse fire from spreading to multiple adjacent buildings. In the days following the fire, he directed and supervised the fire investigation, ultimately determining the origin and cause of the fire. Working in collaboration with the Batavia Police Department, the Genesee County District Attorney's Office, and the New York State Office of Fire Prevention and Control (NYS OFPC), the criminal investigation of the fire led to the arrest of the persons responsible for igniting the fire.
- Fire Origin and Cause
 - Product Failure – Batavia, NY (2014), Responded to a reported structure fire in a large apartment complex. As the incident commander, successfully led the fire department to extinguishing the fire while preserving the fire scene for an origin and cause investigation to be conducted. After the fire was extinguished, conducted an origin and cause investigation that determined the fire was a result of a failure in an electric baseboard heater. The scene was then preserved for the insurance companies and product experts so they could complete their loss site examinations.
 - Accidental Circumstances – Batavia, NY (2013), Responded to investigate a fatal residential structure fire. Upon completion of the investigation it was determined that a fire was started on the first floor of the structure by careless use of smoking materials. The female occupant was unable to rescue her husband who was sleeping on the second floor and suffered from Alzheimer's.
- Emergency Response
 - Structure Fire – Batavia, NY (2005), Responded as a firefighter/paramedic to the reported structure fire. Upon arrival found severe smoke and flame coming from the structure with zero visibility inside the structure. Immediately conducted a primary search of the residence by feel and found an unresponsive victim on the kitchen floor. Removed the victim from the structure to the front yard and performed CPR and advanced life-support measures. The victim was revived, and care was transferred to an ambulance crew for transport to a local hospital for post-resuscitation care.

Forensic Engagements

- Fire, Arson, and Explosion Assessments
 - Residential Structure Arson – Lockport, NY (2017), Structure fire in a two-story, single-family residence. Conducted an origin and cause investigation that revealed multiple points of origin. Samples were collected from the points of origin at the loss site and sent to the laboratory for analysis. The samples came back positive for ignitable liquid residue.

- Residential Duplex Arson – Buffalo, NY (2017), Two-family structure with a fire confined to the upstairs apartment. Investigation found the tenant of the upstairs apartment intentionally set the fire. Evidence was collected and secured from the loss site.
- Fire Origin and Cause
 - Installation Issue – Saratoga Springs, NY (2018), Investigated a large-loss fire in a residential structure. After two joint examinations of the loss site, along with a joint lab examination, it was determined that improper installation of the roof heating element caused the fire.
 - Vehicle Fire – Syracuse, NY (2018), Investigated a vehicle fire that occurred shortly after a new battery was installed. Vehicle was a total loss and the investigation found that a battery terminal connector was not tightened during the new battery installation. Subrogation pursued against the battery installer.
- Product Failure Analysis
 - Vehicle Fire – Rochester, NY (2019), Vehicle fire determined to be caused by a failure of the vehicles electrical body module.
 - Vehicle Fire – Rochester, NY (2018), Investigation of a 2015 Freightliner tractor-truck fire was determined to be directly related to the failure of a ParkSmart HVAC module. During the investigation it was found that there was a recall campaign directly related to this unit that was not completed by the owners.

Professional Experience

- Rimkus Consulting Group, Inc. 2017 – Present
 - Fire Consultant – Fire Division/Great Lakes Region
Fire and explosion evaluations in commercial structures, residential facilities, automobiles, heavy equipment, and conveyances. Also investigates fires involving appliances and electrical devices. Assesses potential liability and subrogation issues. Collects, documents, and preserves evidence to ensure the chain of custody. Conducts interviews with witnesses, responding firefighters, state and local fire marshal agencies, and other pertinent third-party individuals and organizations. Prepares detailed, written investigative reports pertaining to the origin and cause of the fire losses. Provides expert technical and scientific support to clients for subrogation and litigation purposes. Conducts code compliance research to evaluate potential electrical, gas, and installation code violations. Assists personnel with product design failure analysis to determine if the product was the cause or contributing factor in a loss.
- City of Batavia Fire Department 1997 – 2017
 - Fire Investigator (2005-2017)
Conducted origin and cause investigations on fires within the City of Batavia. This position included: origin and cause determination, supervision of all operations and training of the fire department investigation team, and review of all investigations and case files when completed by other investigators.
 - Fire Captain (2007-2017)
Responsible for the supervision of a crew of firefighters and a lieutenant during all fire department operations. Performed the duties of the Incident Commander at emergency scenes.
 - Municipal Training Officer (2007-2017)

Responsible for the administration of the municipal training program. Developed an annual training program to meet the NYS standards for municipal fire departments, instructed fire-training courses, documented all training, developed reports for internal and external use, and developed departmental policies, which included training.

- Fire Lieutenant (2005-2007)

Responsible for the direct supervision of a crew of firefighters assigned to the ladder truck.

- Firefighter/Paramedic (1997-2005)

Responsible for responding to all emergency and non-emergency fire and medical calls for service. Provided patient care on all medical emergencies to the level of EMT- Paramedic and performed various firefighter duties to mitigate the situation on fire responses. Performed fire safety inspections and conducted public safety programs throughout the community.

- Bethany Volunteer Fire Department

1990 – 1997

- Firefighter/Emergency Medical Technician (EMT)

Responsible for responding to all emergency and non-emergency fire and medical calls for service.

Provided patient care on all medical emergencies to the level of EMT and performed various firefighter duties to mitigate the situation on fire responses.

- C. Williams Construction

1989 – 1997

- Owner/Operator

Worked in all aspects of residential and light commercial remodeling and new construction. Managed all record keeping and employee records. Supervised two to three employees on the job to maximize production and ensure safety. Maintained extensive knowledge of new and old building construction, framing, electrical, plumbing, roofing, etc.

- H & L Builders

1985 – 1989

- Construction Laborer

Laborer in all aspects of residential and light commercial remodeling and new construction. Supervised other employees on jobs.

Education, Certifications, and Professional Organizations

- Licensed Private Investigator: Connecticut, Massachusetts, New Jersey, New York, Ohio, Pennsylvania
- Certified Fire Investigator (CFI) (Certification #23-043069): International Association of Arson Investigators (IAAI)
- Certified Fire and Explosion Investigator (CFEI) (Certification #22156-12688): National Association of Fire Investigators (NAFI)
- Certified Fire Investigator (CFI) (NY-9662): National Board on Fire Service Professional Qualifications (National Pro-Board)
- New York State Fire Investigator Level I (Certification #750001-0109-0009)

- New York State Fire Investigator Level II (Certification #750002-0310-0016)
- Basic Fire Fighter Training (229) (Certification #756000-0698-0298)
- Code Compliance Technician (Certification #720000-0504-0066)
- Building Safety Inspector (Certification #B1015-0499)
- Hazardous Materials Technician (Certification #750006-0410-0005)
- Fire Officer I (Certification #758100-0605-5382A)
- Incident Safety Officer (Certification #750011-0513-0030)
- Fire Instructor I (Certification #757100-0605-3382A)
- Fire Instructor II (Certification #757200-0607-3068)
- Fire Service Instructor I (NY-3272)
- Fire Service Instructor II (NY-3518)
- International Association of Arson Investigators (IAAI): Member
- International Association of Arson Investigators (IAAI) – New York Chapter: Member
- National Association of Fire Investigators (NAFI): Member
- Canadian Association of Fire Investigators (CAFI): Member

Continuing Education

- New York State Training: Fire Origin and Cause Determination; Fire Behavior and Arson Awareness; Principle of Fire Investigation; Fire/Arson Investigation; Fire Service Instructor I; Fire Service Instructor II; Legal Issues for the Fire Service Instructor; Firefighting Essentials; Firefighter Survival; Firefighter Assist and Search Team (FAST); Firefighter Safety and Survival for the Company Officer; Ice/Cold Water Rescue – Technician Level; Water Rescue - Awareness Level; Initial Fire Attack; Fire Police; Basic Structural Collapse Operations - Awareness Level; Accident Victim Extrication Training; Confined Space – Awareness and Safety; Alternative Fueled Vehicles and New Vehicle Technology; The Rules Have Changed – The FF Guide to Lightweight Wood Construction; Apparatus Operator – Emergency Vehicle Operations; Emergency Vehicle Operations – Intersection Accident Reduction; Pump Operator; Ladder/Truck Company Operations; Live Fire Training; Conducting Live Fire Training Evolutions; Courage to be Safe: Firefighter Life Safety Initiatives; Municipal Training Officers Workshop; Introduction to Code Enforcement Practices 1; Introduction to Code Enforcement Practices 2; Inspection Procedures for Existing Structures; Inspection of High-Piled Combustible Storage; Inspection of Existing Motor Vehicle Service Stations and Repair Facilities; Annual Code Update Courses; Hazardous Materials First Responder Operations; Hazardous Materials Technician; Hazardous Materials Technician Annual Refresher; Hazardous Materials Incident Safety Officer; Flammable and Combustible Liquid Emergencies; Basic Life Support and Hazardous Materials; Chemical Suicides: Information for the Responder; Recognizing Clandestine Drug Lab Operations; The Challenges of Pesticides and Poisons; Radiation Safety for Firefighters; WMD Trailer In-Service Training Phase II – Equipment
- New York State Instructor Authorization: Accident Victim Extrication; Apparatus Operator – Emergency Vehicle Operations; Courage to be Safe – Firefighter Life Safety Initiatives; Fire Behavior and Arson Awareness; Live Fire Training; Principles of Building Construction: Combustible (NFA); Principles of Building

Construction: Non-Combustible (NFA); Principles of Instruction; Strategy and Tactics for Initial Company Operations (NFA); The Rules Have Changed – The Firefighters Guide to Lightweight Wood Construction; Truck Company Operations; Water Rescue – Awareness Level

- National Fire Academy: Principle of Building Construction: Combustible; Principle of Building Construction: Non-Combustible; Incident Command System; Incident Safety Officer; Strategy and Tactics for Initial Company Operations; Training Operations in Small Departments; Incident Command for High-Rise Operations; Emergency Response to Terrorism: Tactical Considerations for EMS
- New York State/FEMA Incident Command System (ICS) Courses: 100, 200, 300, and 400
- Empire State College: Fire Investigation and Analysis; Introduction to Emergency Planning; Introduction to Emergency Management; Personnel Management for the Fire Service
- Fire Findings Investigation Training Seminars: Investigation of Gas and Electric Appliance Fires; Residential Electricity for Fire Investigators; Investigating Residential Dryer Fires
- Other Training: ATF/Liberty Mutual – Advanced Vehicle Fire Investigations; IAAI - Expert Witness Courtroom Testimony; IAAI – Motor Vehicle Fire Investigation; IAAI/CFITrainer.Net (several programs completed); Buffalo Recruit Firefighter Academy; FDNY - First Line Supervisors Training Program (FLSTP)



Rimkus Consulting Group, Inc.
8910 Purdue Road, Suite 170
Indianapolis, IN 46268
(800) 971-6587 Telephone
(317) 510-6488 Facsimile

March 4, 2016

Re: RCG File No: 58404599
LLV Number: 3305816
VMF Location: 615 South Capitol Avenue in Indianapolis, Indiana
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 3305816, VIN 1GBCS10A2P2913836, that occurred at 2251 Gable Drive in Indianapolis, Indiana on January 9, 2016. In the course of the work, we examined and documented the fire damaged vehicle and interviewed the carrier/operator on January 26, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 615 South Capitol Avenue in Indianapolis, Indiana. In the course of our work we inspected and photographed the vehicle, reviewed maintenance and repair records, and completed witness interviews. The work to complete this assignment was performed by Fire Consultant, John W. Gray, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations."

Conclusions

1. Based on the observable fire patterns, witness statements and remaining physical evidence, it was determined that the fire originated on the underside of the engine compartment in the area of the transmission and exhaust.
2. Prior to the fire, the operator was stuck in the ice and snow and attempted to rock the vehicle back and forth multiple times prior to the fire.

3. The specific ignition sequence and cause of the fire was determined to be a direct result of the vehicle being rocked back and forth, shifting the transmission back and forth, which heated the transmission fluid which leaked out and came into direct contact with the heated exhaust whereby the vapors of the fluid were ignited.

Observations

Exterior Inspection:

The exterior examination of the vehicle revealed evidence of severe fire damage primarily concentrated in the front portion of the vehicle. The engine compartment and a large portion of the passenger compartment were severely fire damaged.

Interior Inspection:

The interior examination of the vehicle revealed evidence of fire damage throughout the passenger compartment. We observed that the dashboard area was severely damaged. There was smoke and heat damage observed throughout the remainder of the passenger and cargo compartments.

Engine Compartment Inspection:

The engine compartment was severely fire damaged with almost 100% of the available combustible material consumed during the fire. The vehicle was equipped with a four cylinder, 2.5 liter, gasoline engine. The engine oil level was observed to be within normal limits. There was no transmission fluid visible on the dipstick. The LLV was equipped with a GM fuel filter system.

Undercarriage Inspection:

Examination of the undercarriage indicated that the involved LLV was mounted on a GM frame. We observed that at the forward portion of the transmission oil pan the pan gasket was partially dislodged allowing transmission fluid to leak. We observed that the transmission fluid was dripping onto the exhaust crossover pipe. We observed fire patterns on the frame rails on both sides of the transmission that indicated this was the area of origin for the fire.

Fuse Panel Inspection:

The fuse panel was positioned in the dashboard on the driver's side of the vehicle. Due to severe fire damage, we were unable to check the condition of individual fuses in the panel.

Area of Fire Origin:

The area of fire origin was determined to be at the location where transmission fluid was being expelled from the transmission. The flammable fluid contacted the hot exhaust crossover pipe and ignited causing the fire.

Contributing Factors:

It is our opinion that the driver was attempting to free the vehicle from ice and snow at which time he shifted from forward to reverse several times causing the transmission fluid to heat up. The elevated temperatures in the transmission most probably contributed to the pan gasket failure allowing the fluid to leak.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interviews:

On January 28, 2016 we interviewed the carrier/operator, who stated that on January 13, 2016, at approximately 11:45 A.M., he was driving a replacement vehicle on his regular mail route. He stated that the vehicle was stuck in the ice and snow and that he "rocked" the vehicle back and forth several times to get free. He stated he pulled forward a few feet and then he stopped and put the vehicle in "park." He stated that he then attempted to shift into "drive" and that the transmission would only go into reverse. He then realized smoke was coming from under the vehicle. He stated he then removed the mail from the vehicle. He stated that the vehicle was fully involved in fire when the Indianapolis Fire Department arrived to extinguish the fire.

Service Records:

A review of the service records provided indicated that the involved LLV was last service on January 6, 2016. The mileage was recorded as 130,131. During the service, the transmission assembly was repaired and/or replaced. The entry in the records states "27-LLV Transmission Assy – Replace". No other work was observed that would have contributed to the cause of the fire. The work was performed by the VMF.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to

determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

John W. Gray

John W. Gray, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

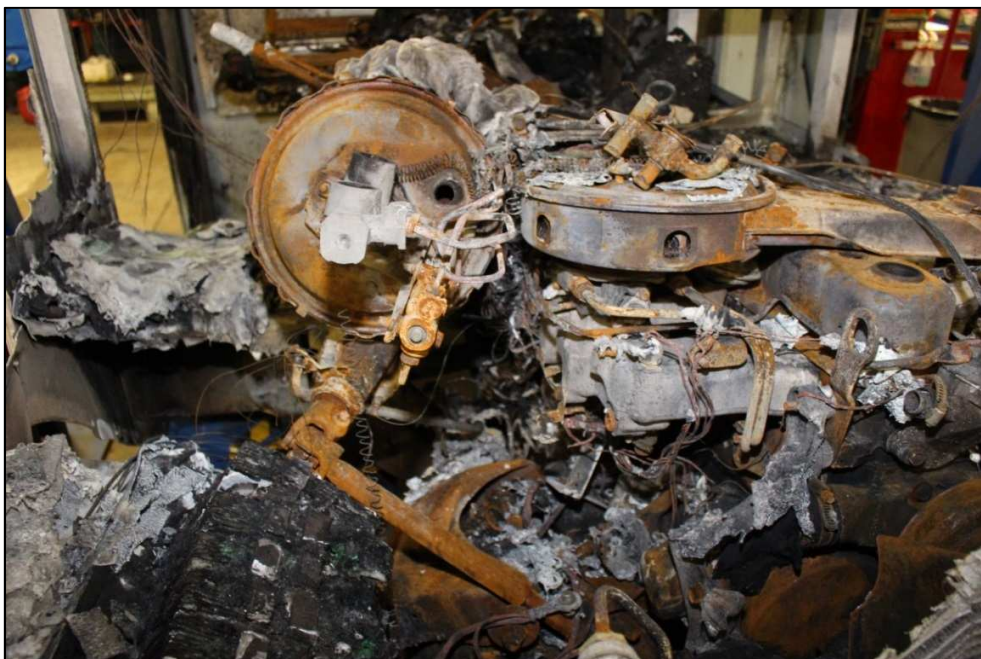
Attachments: Photographs, CVs

March 4, 2016
RCG File No. 58404599

Photograph 1
Front view of LLV 3305816.



Photograph 2
Examination of the engine compartment.



March 4, 2016
RCG File No. 58404599

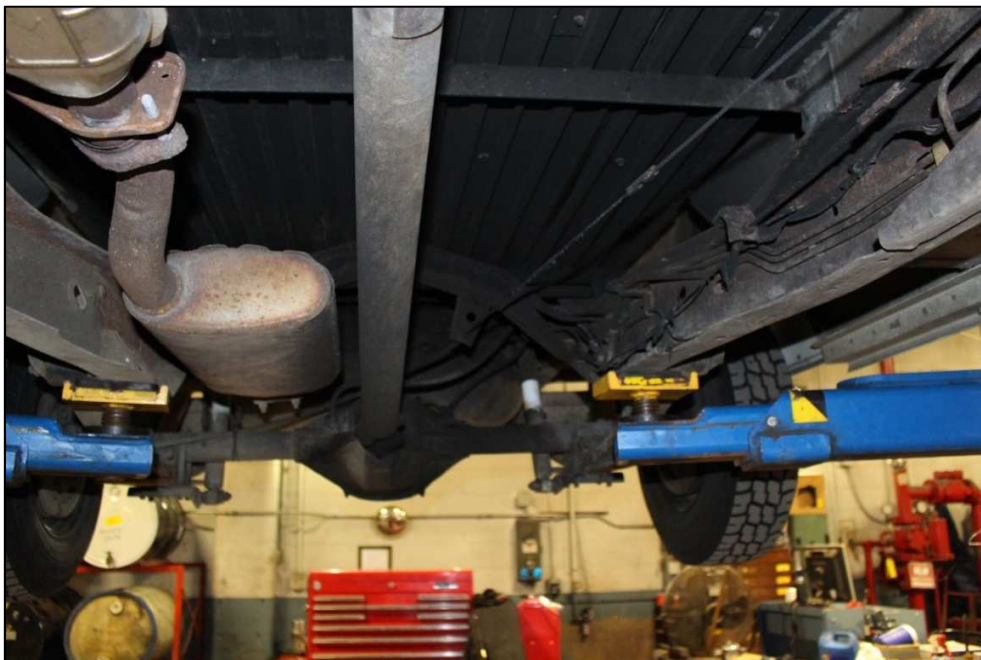
Photograph 3

Examination of the passenger compartment.



Photograph 4

Examination of the undercarriage (vehicle mounted on GM frame).



March 4, 2016
RCG File No. 58404599

Photograph 5

View of the forward portion of transmission (note leaking fluid).



Photograph 6

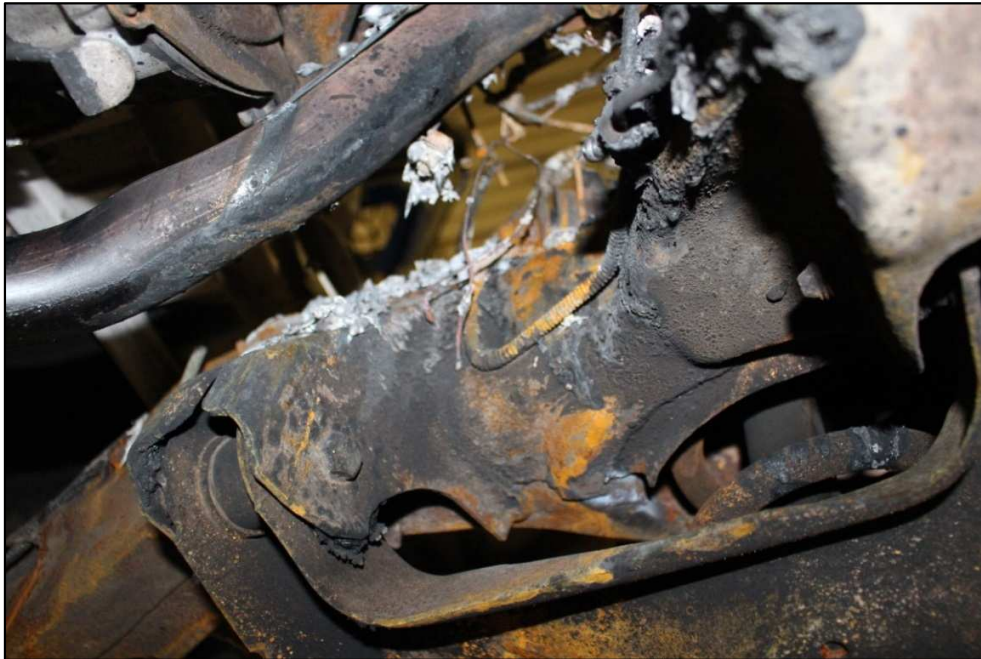
View of the transmission looking forward.



March 4, 2016
RCG File No. 58404599

Photograph 7

View of burn pattern on frame rail in area of origin.



Photograph 8

View of the fuel filter.



March 4, 2016
RCG File No. 58404599

CVs



**JOHN W. GRAY C.F.I., C.V.F.I.
FIRE CONSULTANT**

Mr. Gray is a Certified Fire Investigator (CFI) through the International Association of Arson Investigators and a Certified Vehicle Fire Investigator (CVFI) through the National Association of Fire Investigators. He is also certified as a Fire Investigator I by the State of Indiana. Mr. Gray was honorably retired after a 25-year career as a police officer with the Marion County Sheriff's Department in Indianapolis.

Since joining Rimkus Consulting Group in March 2005, Mr. Gray has performed hundreds of fire investigations for insurance companies, law firms, and property owners. His professional experience includes residential, commercial, and vehicle fire origin and cause investigation. Mr. Gray has testified in matters regarding fire origin and cause in both civil and criminal proceedings.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator (CFI) International Association of Arson Investigators
Certified Vehicle Fire Investigator (CVFI) National Association of Fire Investigators
Certified Fire Investigator I State of Indiana
Certified Law Enforcement Officer (Retired) State of Indiana
Licensed Private Investigator (IN-IL-OH-KY-MI-PA-LA)

Member of: International Association of Arson Investigators (IAAI)
International Association of Arson Investigators (Indiana Chapter # 14)
National Association of Fire Investigators (NAFI)

EMPLOYMENT HISTORY

2005 – Present	Rimkus Consulting Group, Inc.
1980 – 2005	Marion County (Indiana) Sheriff's Department.
1974 – 1980	McCormick/All Portions Inc.



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
14635 West 95th Street
Lenexa, Kansas 66219
(800) 618-2210 Telephone
(877) 228-2223 Facsimile

February 23, 2018

Re: RCG File No: 22601427
LLV Number: 3306351
Inspection Location: Chad's Auto Repair, 1203 South Garrison St. Carthage, Missouri
Subject: Preliminary/Final Report

On December 13, 2017, a fire involving LLV 3306351, VIN 1GBCS10A1P2914282 occurred. At the time of the fire, the vehicle was located on West Fir Road in Carthage, Missouri. On January 24, 2018, Rimkus Consulting Group, Inc. was retained to examine LLV 3306351.

Our inspection of the vehicle occurred on January 29, 2018, at Chad's Auto Repair located at 1203 South Garrison Street in Carthage, Missouri. In the course of our work, we completed an onsite inspection of the vehicle, including photographing the vehicle, and completing a witness interview. The vehicle examination was conducted by Fire Consultant Philip A. Noah, IAAI-CFI, CVFI. This report and case was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment in the area of the bulkhead on the right side of the vehicle.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the passenger compartment,

engine compartment, dashboard area, and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the passenger compartment, engine compartment, dashboard area, and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a direct result of ignition of either leaking or atomized engine fluid coming in contact with a competent ignition source within the engine compartment as a cause of the fire.

Observations

Exterior Inspection:

An exterior examination of the vehicle began at the front and continued in a clockwise direction. Fire damage and mass loss of combustible materials was severe throughout the front portion of the vehicle. The most severe fire damage was observed within the engine compartment, to the rear of the front grill. Exterior fire patterns on the two sides of the vehicle were consistent with both front doors open during the fire. The rear of the vehicle was unremarkable with respect to fire damage.

Interior Inspection:

Fire movement and intensity pattern observed were consistent with fire spread from the engine compartment into the interior compartment. Fire damage decreased from the front of the interior compartment to the rear, cargo compartment.

Engine Compartment Inspection:

Fire damage throughout the engine compartment was severe and most of the combustible materials in the rear portion of the engine compartment had been consumed. The most severe fire damage was observed on the right rear portion of the engine.

Undercarriage Inspection:

Inspection of the undercarriage was unremarkable with respect to fire damage.

Fuse Panel Inspection:

Fire damage to the fuse panel was severe and most of the combustible materials had been consumed. Fire movement and intensity patterns were consistent with fire spread from the right side of the engine compartment.

Area of Fire Origin:

Based on the observed patterns of fire damage and a systematic evaluation of the physical evidence, the identified area of fire origin was along the right side at the rear of the engine compartment. The point of the fire's origin, the first fuel ignited and ignition sequence of the fire was not conclusively identified from the available evidence that remained.

Contributing Factors:

Based on the information obtained from the postal employee, who reported smelling an odor of gasoline just before the fire occurred, a fuel leak or failure of the fuel filter and/or fuel lines along the right side of the engine could not be eliminated as a possible cause of the fire.

Evidence Collected:

Based upon the severity of damage to the fuel filter and fuel lines, no physical evidence was collected.

Interview:

Ms. carrier/driver, provided the following information:

- She was driving the vehicle when she smelled gas.
- She also noticed the speedometer stopped working and the vehicle lost power and died.
- Upon stopping she noticed smoke coming into the vehicle. She got out of the vehicle and removed the mail, called 911 and her supervisor.
- A passerby attempted to extinguish the fire with a fire extinguisher but was unable to extinguish the fire.
- No other problems were noted on the vehicle prior to the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records it was determined that no maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Philip M. Noah

Philip M. Noah, IAAI-CFI, CVFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

February 23, 2018
RCG File No. 22601427

Photograph 1

View of the front left corner.



Photograph 2

View of engine compartment from the right rear.



Photograph 3

View of the right side of the engine from the bulkhead facing forward.



Photograph 4

View of the fuel filter and fuel lines adjacent to the exhaust manifold.



February 23, 2018
RCG File No. 22601427

CVs



Philip M Noah, IAAI-CFI Fire Consultant

Mr. Noah is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson investigators and a Certified Fire Investigator (CFI) in the State of Missouri. Mr. Noah is a licensed Private Investigator in the State of Arkansas; Mr. Noah is a licensed Private investigator and licensed Private Fire Investigator in the State of Missouri. Mr. Noah has over 27 years of experience in fire suppression operations, fire/explosion investigations, technical rescue, hazardous material incidents, fire code enforcement, and building construction plans review. He has lead or assisted in the origin and cause of more than 300 fire and explosion investigations. As a fire investigator he conducted origin and cause investigations on fatal structure fires, residential fires, commercial fires and vehicle fires.

Mr. Noah held the position of Fire Marshal with the Springfield Mo Fire Dept. from 2009 to 2015. As a Fire Marshal Mr. Noah served as a public safety bomb technician on the Springfield Mo. Bomb squad, and was a founding member of the Greene County, Missouri Arson task force, during this time he worked closely with the FBI and ATF. While in this position he also performed hundreds of building plans reviews looking for International Fire Code compliance. Mr. Noah has testified and been qualified as an expert in court proceedings pertaining to fire origin and causation.

Mr. Noah has instructed courses in fire scene evidence preservation, explosives awareness and fire investigation awareness for the insurance industry.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Missouri State University - General education and Chemistry
Drury University - Law Enforcement Academy
Certified Fire Investigator: IAAI (Tested)
Licensed Private Fire Investigator: State of Missouri
Licensed Private Investigator: State of Missouri
Certified Fire Investigator: State of Missouri (Tested)
Class "A" Peace officer license: State of Missouri (Tested)
Certified Firefighter 1&2: State of Missouri (Tested)
Certified Fire Officer 1&2: State of Missouri (Tested)
Certified Fire Inspector: State of Missouri (Tested)
Certified Fire Inspector 1&2: International Code Council (Tested)
Certified Bomb Technician: Federal Bureau of Investigation (Tested)
Certified Fire Service Instructor: State of Missouri (Tested)
Certified Major Crimes Investigator: Springfield Mo Police Department (Tested)
International Association of Arson Investigators, 2010- Present
Missouri Professional Fire and Fraud Investigators (past)
International Association of Fire Fighters (past)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
Syracuse City Center, Suite 712
499 South Warren Street
Syracuse, New York 13202
(800) 961-8785 Telephone
(201) 368-8557 Facsimile
Certificate of Authorization No. 0013387

April 19, 2019

Re: RCG File No: 47400487
LLV Number: 3306879
VMF Location: 5320 Commerce Parkway West Parma, Ohio
Subject: Preliminary/Final Report

Dear

On March 13, 2019, a fire occurred involving a US Postal Service vehicle located at 36550 Estee Lane in Grafton, Ohio. The fire involved a 1993 Grumman, USPS LLV 3306879 with the Vehicle Identification Number (VIN) 1GBCS10AXP2914815.

Rimkus Consulting Group, Inc. was retained on March 14, 2019, to determine the origin and cause of the fire. In the course of the work, we examined and documented the fire-damaged vehicle with written notes and digital photographs. Our work to complete this assignment was performed on March 18, 2019, by Craig S. Williams, IAAI-CFI, Fire Consultant. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association NFPA 921 – “Guide for Fire and Explosion Investigations” and NFPA 1033 – “Standard for Professional Qualifications for Fire Investigator”.

Conclusions

1. The fire originated in the engine compartment in the area of the bulkhead on the mail side of the vehicle.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination. However, oil leaking from the valve cover gasket and being ignited by the exhaust manifold could not be eliminated as a potential cause of the fire.

Observations

Exterior Inspection:

The exterior examination of the fire-damaged vehicle commenced from the front of the LLV and continued in a clockwise rotation. The inspection revealed that the vehicle sustained severe fire damage throughout the LLV. Fire patterns were consistent with a fire that originated within the engine compartment and spread towards the rear of the vehicle.

The mail side of the vehicle sustained the most severe damage in comparison to the driver's side of the vehicle. The majority of the aluminum body on the mail side front fender, engine compartment hood, bulkhead, driver's compartment roof and cargo compartment roof was consumed by the fire. The rear tires were intact and the front mail side tire sustained greater damage as compared with the front driver's side tire.

Interior Inspection:

The interior inspection revealed severe fire damage in the interior compartment and moderate fire damage in the cargo compartment. The bulkhead was consumed by the fire at the front of the interior compartment. The floor on the mail side was partially consumed near the bulkhead. The fire debris on the floor was sifted through and the remains of several electrical switches and other components were found.

A garbage bag and a mail bin containing fire debris that was collected from the ground at the location of the fire were located in the interior compartment. The fire debris was removed, examined, photographed, and documented.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil.

The engine compartment sustained severe fire damage and the fire appeared to have lasted an extended period of time before being extinguished. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. The most severe damage to the engine compartment was located on the mail side. All of the combustible items in the engine compartment were consumed by the fire.

No evidence was observed of the fire originating within the brakes, wheel hubs or tires in the area of the engine compartment. These were eliminated as potential causes of the fire.

The battery was consumed by the fire. The positive conductor that had been connected to the battery and was attached to the starter was melted and severed near the location of the battery at the time of the fire. The positive conductor was traced down to the starter and it was found to be routed in a different path than was observed on an exemplar vehicle. The way that it was routed created a potential pinch or wear point at the rear of the starter near the frame. This did not contribute to or cause the fire.

The exterior surface of the mail side of the engine block had oil on the surface. The engine block was examined and no holes were found in the engine block. The valve cover was removed and the gasket on the back side of the engine was covered with oil and it appeared to be leaking at that location. Oil leaking at this location has the potential of coming in contact with the exhaust manifold and igniting. This could not be eliminated as a potential cause of the fire.

Undercarriage Inspection:

The undercarriage was inspected and fire patterns found along the undercarriage revealed that the fire travel from the front of the vehicle towards the rear. Fuel lines on the undercarriage were intact. The LLV was mounted on an AM General frame and was undamaged. The AM General frame was installed in August 2018, following an accident that occurred in June. The collision repairs were completed by All-Pro Collision, Inc. in Oakwood Village, Ohio. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the engine compartment.

Fuse Panel Inspection:

The fuse panel normally positioned in the driver's compartment to the right side of the steering column was partially consumed by the fire. The remains of the printed circuit board and several conductors found in that location were examined and no adverse electrical activity was observed on the remains.

Area of Fire Origin:

Fire patterns indicated that the fire originated within the engine compartment and spread towards the rear of the vehicle.

Potential Contributing Factors:

There were no contributing factors identified.

Evidence Collected:

No items of evidentiary value or artifacts were collected during the vehicle inspection.

Interview:

The carrier stated that the vehicle stalled going up a driveway and she then heard a "poof" and saw smoke coming from the dash vents and under the steering column. She exited the vehicle with the keys and shortly thereafter the vehicle rolled down the drive and was engulfed in flames. The vehicle was operating properly prior to the incident.

Service Records:

Based upon our review of the vehicle's maintenance records, no work to repair or replace the fuel lines was conducted within the past year that was documented on the records provided. Regular preventative maintenance was performed and any fuel leaks that may have been detected during those services was not documented. It was inconclusive that the maintenance that was performed on this vehicle was a contributing factor to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Craig S. Williams

Craig S. Williams, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

April 19, 2019
RCG File No. 47400487

Photograph 1
Front of the vehicle.



Photograph 2
Driver's side of the vehicle.



April 19, 2019
RCG File No. 47400487

Photograph 3
Rear of the vehicle.



Photograph 4
Mail side of the vehicle.



April 19, 2019
RCG File No. 47400487

Photograph 5
Driver's compartment.



Photograph 6
Cargo area.



April 19, 2019
RCG File No. 47400487

Photograph 7

Engine compartment view from the front.



Photograph 8

Engine compartment view from the passenger compartment.



April 19, 2019
RCG File No. 47400487

Photograph 9
Underside of the engine.

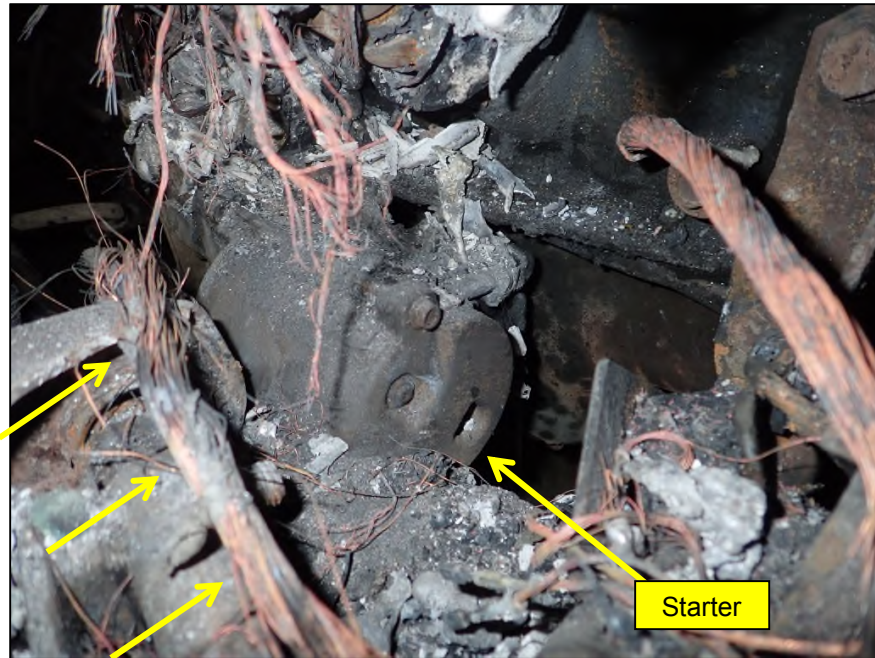


Photograph 10
Undercarriage.



Photograph 11

Positive conductor from the battery to the starter on the burned vehicle.



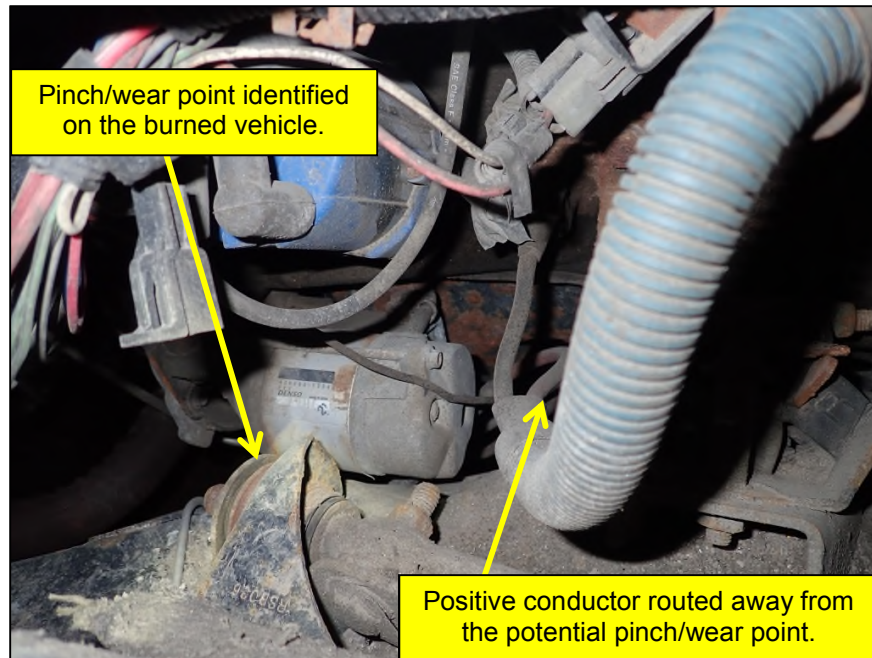
Photograph 12

Positive conductor from the battery to the starter on the burned vehicle.



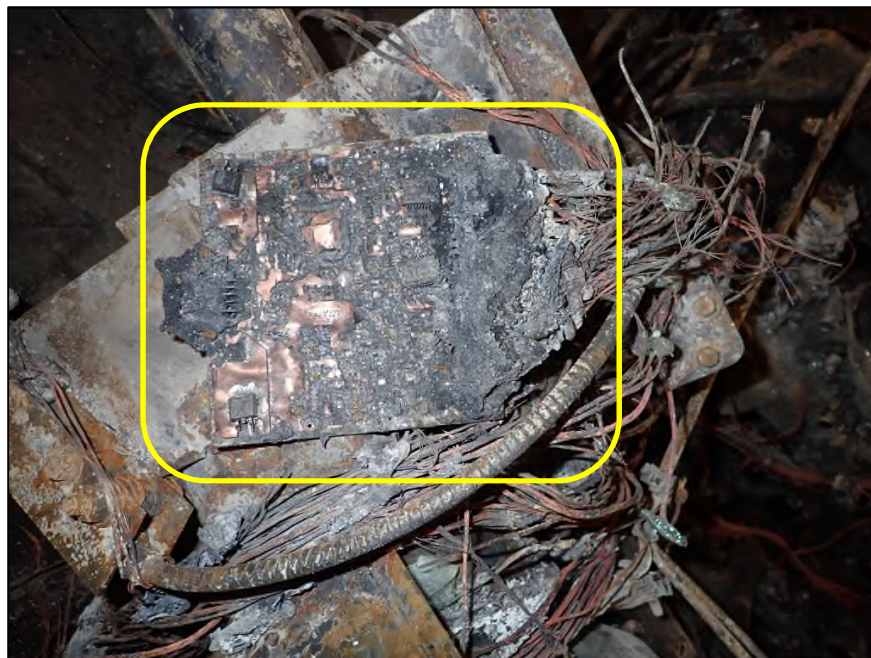
Photograph 13

Positive conductor from the battery to the starter on an exemplar vehicle.



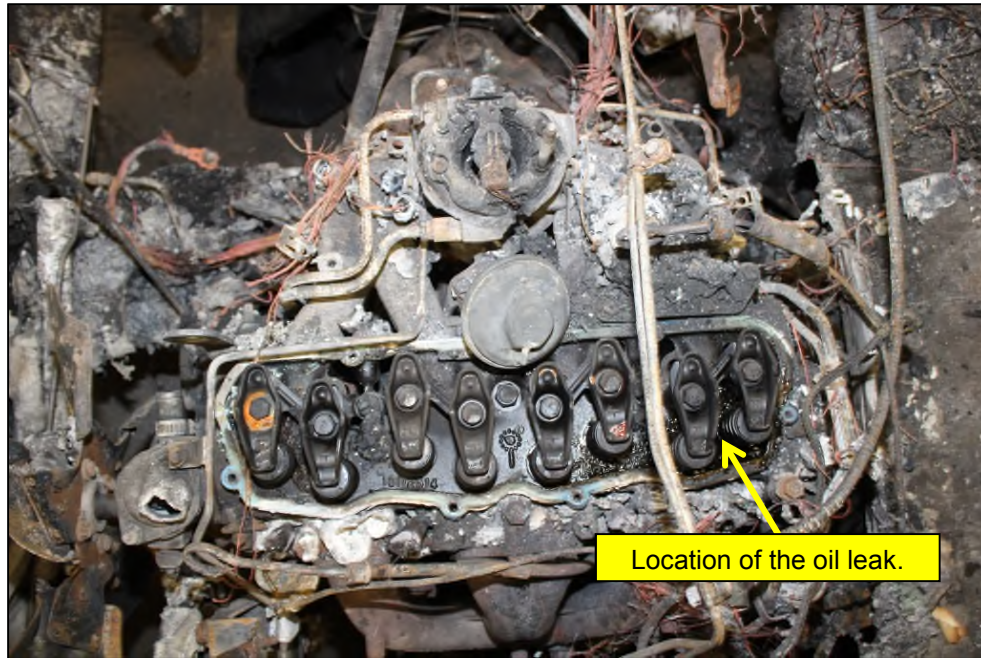
Photograph 14

Remains of a circuit board found in the area of the fuse panel.



Photograph 15

Valve cover removed showing the area of an oil leak.



Photograph 16

Close-up of the valve cover gasket at the area of the oil leak.



April 19, 2019
RCG File No. 47400487

Curriculum Vitae



CRAIG S. WILLIAMS, IAAI – CFI, NAFI - CFEI FIRE CONSULTANT

Mr. Williams is a Certified Fire Investigator (CFI) with the International Association of Arson Investigators (IAAI), Certified Fire and Explosion Investigator (CFEI) with the National Association of Fire Investigators (NAFI), New York State Level I and II Fire Investigator and a Certified Fire Investigator (CFI) with the National Board of Fire Service Professional Qualifications (Pro-Board). He is also a Licensed Private Investigator in the States of New York, Ohio, Pennsylvania, New Jersey, Connecticut and Massachusetts. Mr. Williams has been active in the fire service for 27 years holding positions of Firefighter, Lieutenant, Captain, Interim Fire Chief, Municipal Training Officer, Fire Investigator and Fire Investigator Team Leader.

Mr. Williams's area of expertise is specializing in origin and cause fire investigations of residential and commercial structures, vehicles and heavy construction equipment. Throughout his career, he has obtained several state, national and international certifications which include Fire Investigator, Fire Instructor, Fire Inspector, Fire Officer, Incident Safety Officer, Hazardous Materials Technician, Building Safety Inspector and Firefighter. He has also completed numerous educational seminars and continuing education courses in the field of fire investigation.

While serving in the capacity of Municipal Training Officer, Mr. Williams coordinated and instructed several New York State Office of Fire Prevention and Control courses to the City of Batavia Fire Department. These courses covered all aspects of the fire service including fire investigation courses.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Licenses and Certifications

International Association of Arson Investigators (IAAI) – Certified Fire Investigator (CFI) # 23-043069

National Association of Fire Investigators (NAFI) – CFEI # 22156-12688

National Pro-Board, NFPA 1033, Certified Fire Investigator (CFI) – NY-9662

New York State Fire Investigator Level I – Certification #750001-0109-0009; Fire Investigator Level II – Certification #750002-0310-0016; Private Investigator License – ID # 11000196135; Basic Fire Fighter Training (229) – Certification #756000-0698-0298; Code Compliance Technician – Certification #720000-0504-0066; Building Safety Inspector Certification – Certification #B1015-0499; Hazardous Materials First Responder Operations – Cert. #750005-0410-0020; Hazardous Materials Technician – Certification #750006-0410-0005; Fire Officer I – Certification #758100-0605-5382A; Incident Safety Officer – Certification #750011-0513-0030; Fire Instructor I – Certification #757100-0605-3382A; Fire Instructor II – Certification #757200-0607-3068;

National Certification – Fire Service Instructor I - National Registry # NY-3272; Fire Service Instructor II - National Registry # NY-3518



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2355 Highway 36 West
Roseville, MN 55113
(630)321-1846 Telephone
(630)321-1847 Facsimile

February 3, 2016

Re: RCG File No: 53800258
LLV Number: 3307038
Post Office Location: 1455 32nd Street in South Fargo, North Dakota
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 3307038 that reportedly occurred at 950 40th Avenue South in Moorhead, Minnesota on November 2, 2015. In the course of the work, we examined and documented the fire-damaged vehicle, and interviewed the carrier/operator on November 12, 2015.

The examination of the vehicle took place at the USPS Post Office at 1455 32nd Street in South Fargo, North Dakota. The inspection and documentation of the LLV was performed by Fire Consultant Lancelot E. Furber, IAAI-CFI/CI. This investigation and report was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the interior passenger compartment of the involved LLV.
2. The specific area of fire origin was determined to be in and around the dashboard area where the headlamp switch was mounted.
3. The specific ignition sequence and cause of the fire, based on witness statements and the remaining observable physical evidence, was a failure of the headlamp switch.

Observations

Exterior Inspection:

The exterior examination of the vehicle revealed heat and fire damage to the operator's compartment of the LLV.

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments was conducted working from the areas of least fire damage to the area of greatest fire damage. Our interior examination revealed extensive fire and heat damage to the operator's compartment at the center of the dash area of the LLV.

Engine Compartment Inspection:

Examination of the engine compartment revealed heat damage throughout this area. The LLV's battery was found intact and there were no visible arc, faults or failures identified to the battery and/or battery cables which could have offered an ignition source for this fire. Engine fluid levels were checked and found to be within the recommended operation levels. There was no visible evidence to support a claim that the fire originated within the engine compartment of this LLV. The vehicle was equipped with a GM fuel filter system.

Undercarriage Inspection:

Examination of the undercarriage could not be conducted by lifting the vehicle due to the required lifting equipment not being present at this location. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

Examination of the fuse panel, located within the operator's compartment, could not be conducted due to the severity of the fire damage within this area.

Area of Fire Origin:

The area of fire origin was determined to be operator's compartment at the center of the dash area. The point of fire origin was at the headlamp switch. There was physical evidence of melted metals within the area below the headlamp switch from a heat source above this area. There was also documented evidence, in the form of a witness statement from the operator, which stated that flames were identified at the headlamp switch and that the operator attempted to extinguish the flames at the headlamp switch but was unsuccessful. The operator witnessed the fire spread throughout the LLV.

Contributing Factors:

Based on the observed physical evidence and witness statements, a failure involving the headlamp switch positioned in the dashboard of the vehicle was the most probable ignition source for the fire. Items of evidence were collected and shipped for laboratory examination.

Evidence Collected:

Evidence/artifacts collected at the time of the RCG examination include:

1. Debris of switches and gauges collected from the operator's floor area (**Photograph 3**).
2. ECM collected from the center of dash area.
3. Dash plate and gauge debris collected from operator's seat.
4. Dash electrical wiring harness.

All evidence/artifacts were transferred to Jack R. Kennedy III, in our Charlotte, North Carolina office, for secured storage. Collected evidence was examined and documented in the lab. The evidence inspection confirmed the failure of the headlamp switch in the area of fire origin.

Interviews:

USPS Carrier was interviewed by telephone at the time of our examination. During this interview, she stated that she smelled plastic burning and saw flames coming from the headlamp switch of the involved LLV. She stated that when she attempted to turn off the switch, the plastic knob melted when she touched it and she was unable to turn off the switch. She stated that there was not a fire extinguisher in the LLV and she could not extinguish this fire by other means. She added that she called 911 and then a nearby co-worker for help.

Prior to the fire, she was operating the LLV for approximately 1.25 to 1.5 hours. The head lamps were "ON" the entire time. She did not witness any flickering of the headlamps or electrical issues. The regular operator of this LLV called in sick the day of this event. She did not normally operate this LLV.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to

us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Lancelot E. Furber

Lancelot E. Furber, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

February 3, 2016
RCG File No. 53800258

Photograph 1
Exterior of LLV.



Photograph 2
LLV operator's compartment.



February 3, 2016
RCG File No. 53800258

Photograph 3

Debris of switches and gauges collected from the operator's floor area.



February 3, 2016
RCG File No. 53800258

CVs



**Lancelot E. Furber, GFireE, IAAI-CFI/CI, NAFI-CFEI
Fire Consultant**

Mr. Furber holds an Associates of Arts and Science Degree, in Fire Science, from Pikes Peak Community College and a Graduate Diploma from the Institution of Fire Engineers/Engineering Council located in London, England in addition to numerous specialized training classes in specific areas. He is a Certified Fire Investigator and Fire Instructor through the International Association of Arson Investigators, a Certified Fire and Explosion Investigator through the National Association of Fire Investigators, and is a Certified Firefighter, Certified Fire Officer and Certified Hazardous Material Operations/Technician. Mr. Furber holds certificates from Lehigh County Technical College in Automotive Technology and Residential Electrical Construction. Mr. Furber has testified as an expert witness in arbitration hearings as well as State criminal and civil courts.

Mr. Furber has an extensive background in Fire Investigation, Fire Suppression, and Vehicle Extrication. Mr. Furber is a board member of the National Fire Protection Association (NFPA) Fire Science & Technology Educators Section and the NFPA Fire Service Section. His professional experience includes computer fire modeling, forensic photography, forensic evidence collection, fire and explosion investigation, ignition scenarios and fire travel experimentation, and full scale live fire testing.

Education and Professional Associations

Associates of Arts and Science (Fire Science) – Pikes Peak Community College

Graduate Diploma – Institution of Fire Engineers/Engineering Council

Certified Fire Investigator – International Association of Arson Investigators

Certified Fire Instructor – International Association of Arson Investigators

Certified Fire and Explosion Investigator – National Association of Fire Investigators

Certified Firefighter II – PRO Board/NBFSPQ

Certified Fire Officer II – PRO Board/NBFSPQ

Certified Haz-Mat Operations/Technician – PRO Board/NBFSPQ

Certified Emergency Medical Technician

Member of: International Association of Arson Investigators; International Association of Identification; National Association of Fire Investigators; National Fire Protection Association; National Association of Subrogation Professionals; National Fire Academy Alumni Association; Professional Fire & Fraud Investigators Association; Motorsports Professional Group
Motorsports Safety Group



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
4000 Eagle Point Corporate Drive
Suite 122
Birmingham, Alabama 35242
(205) 314-5718 Telephone
(770) 438-2189 Facsimile

November 8, 2017

Re: RCG File No: 44301439
LLV#: 3308018
VMF Location: 2415 10th Street Southwest Huntsville, Alabama
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 3308018, VIN 1GBCS10AXP2915950. The vehicle was examined at the USPS Huntsville VMF located at 2415 10th Street Southwest in Huntsville, Alabama. The fire incident reportedly occurred on September 29, 2017, while the vehicle was being driven by the carrier Ms. Jill Howington.

In the course of our work, the vehicle was inspected and photographed and interviewed the mechanics at the VMF in Huntsville, Alabama on October 12, 2017, and Ms. was interviewed on October 27, 2017. Our work to complete this assignment was performed by Fire Consultant Ronald Blankenship, IAAI-CFI. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the dashboard area of the passenger compartment of the vehicle.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the passenger compartment and the dashboard area and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the dashboard components and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a high-resistance connection generating heat until the combustible materials located in the area reached their ignition temperature as a cause of the fire.

Observations

Exterior Inspection:

It was determined that the vehicle was constructed on a GM frame. Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The exterior examination of the vehicle revealed that the aluminum exterior had failed due to thermal heating that included the hood, driver's side front fender, mail side front fender and the vehicle's roof above the passenger compartment. All of the vehicle's glass had failed due to thermal heating. The majority of the front tires had been consumed by the fire. The greatest degree of fire damage was observed in the area of the passenger compartment.

Interior Inspection:

The mail compartment of the vehicle was examined and fire damage was observed throughout. The majority of the combustible materials had been consumed by the fire. An examination of the electrical conductors located along the dash revealed that there was no physical evidence of adverse electrical activity. The cargo area sustained fire damage that was consistent with fire growth from the passenger compartment.

Engine Compartment Inspection:

The engine was determined to be a 2.5L fuel injection engine with a standard coil. The engine compartment of the vehicle was examined and fire damage was observed throughout. The lower radiator hose on the driver's side was observed connected to the

radiator and engine. Partial remains of the upper radiator hose were observed connected to the engine. The radiator was observed to have a greater degree of thermal damage along the mail side. This was consistent with fire impingement into the engine compartment via the mail side of the bulkhead.

Undercarriage Inspection:

The undercarriage of the vehicle was examined and no visible fire damage was observed.

Fuse Panel Inspection:

Due to the extensive fire damage, the fuse panel could not be inspected.

Area of Fire Origin:

It was determined, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the passenger compartment.

Contributing Factors:

Electrical overheating issues with the electrical connectors for the dash mounted fan and the rear fan that was in the area of origin could not be eliminated. The involved components were collected and sent to the Rimkus laboratory in the Charlotte, North Carolina office for further analysis.

Evidence Collected:

Exhibit 1: The remains of the dash fan and electrical components.

Exhibit 2: Electrical components that were connected to the dash fan that were removed from other LLVs in the Huntsville VMF.

Interviews:

The driver of the vehicle reported that on September 29, 2017, she had been driving the vehicle for approximately 15 minutes when she began to smell an odor that was consistent with new brake pads. While she was driving, the vehicle's flashers were "on" and the rear fan was "on". She reported that the dash mounted fan did not work. After smelling the odor, she observed smoke coming out around the

defrost vents along the dash. Within approximately 3 minutes, she observed fire come out around the dash. Ms. reported the smoke and fire was on the mail tray side of the dash. She had been driving the vehicle since May 10, 2017, and had not experienced any problems.

Lab Exam:

All artifacts collected were examined by Forensic Division Manager Mark H. Nelson, P.E. on November 7, 2017. Multiple loose connections were observed to the wiring terminal connection points associated with the fan and the fan switch. A high-resistance connection generating heat until the combustible materials located in the area reached their ignition temperature could not be eliminated as a cause of the fire.

Service Records:

The past 12 months maintenance records for the LLV were provided and reviewed. After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance, age, and degradation may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Ronald L. Blankenship

Ronald L. Blankenship, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

November 8, 2017
RCG File No. 44301439

Photograph 1
View of the front.



Photograph 2
View of the driver's side.



November 8, 2017
RCG File No. 44301439

Photograph 3
View of the rear.



Photograph 4
View of the mail side.



November 8, 2017
RCG File No. 44301439

Photograph 5

View of the lower and upper radiator hoses on the driver side of the engine.



Photograph 6

View of the radiator.



November 8, 2017
RCG File No. 44301439

Photograph 7

View of the cargo area.



Photograph 8

View of the passenger compartment.



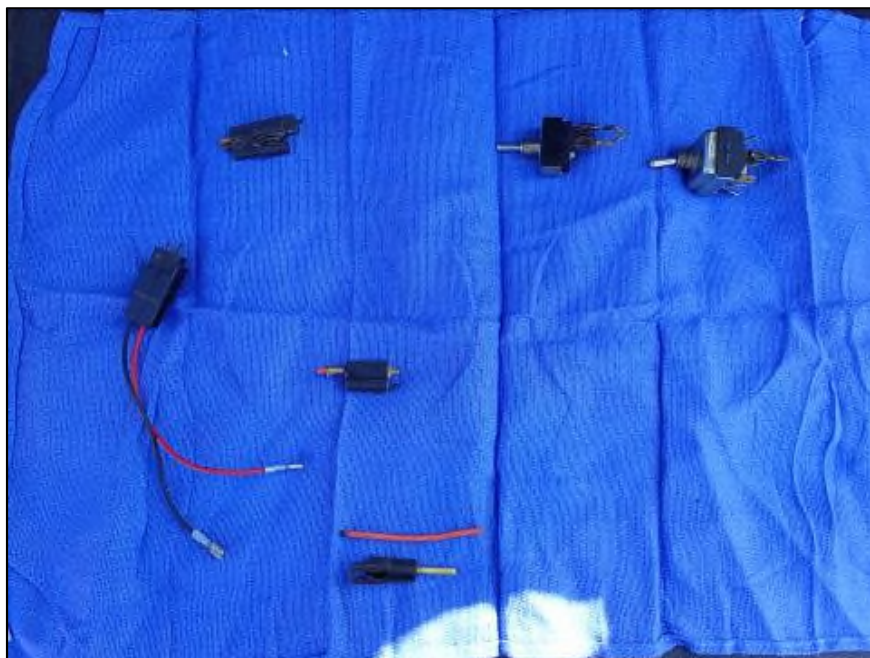
Photograph 9

View of the collected artifacts from the vehicle.



Photograph 10

View of the collected artifacts from other LLVs.



November 8, 2017
RCG File No. 44301439

CVs



Rimkus Consulting Group, Inc.
826 Creighton Road, Suite 101A
Pensacola, Florida 32504
(850) 475-1378 Telephone
(850) 475-9226 Facsimile
Certificate of Authorization No. 8301

May 2, 2018

Re: RCG File No: 53006532
LLV Number: 3309401
VMF Location: 1400 West Jordan Street Pensacola, Florida
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 3309401, which reportedly occurred at 1325 Commerce Drive in Crestview, Florida on April 11, 2018, at 11:00 A.M. In the course of the work, we examined and documented the fire-damaged vehicle, spoke with maintenance personnel and obtained maintenance records.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 1400 West Jordan Street in Pensacola, Florida on April 17, 2018. The work to complete this assignment was performed by Fire Consultant Hubert T. Peete, IAAI-CFI. A technical review of this report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach, as recommended in the current edition of National Fire Protection Association's NFPA-921, "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated within the engine compartment of the involved LLV.
2. The specific area of origin was at and around the battery cable routed at the right side of the engine that powered the engine starter.

3. The specific ignition sequence and cause of the fire was determined to be an adverse electrical event at the starter battery cable that was routed through a retaining clamp at the right side of the engine. The cable exhibited physical evidence consistent with adverse electrical activity and the cable was severed at the retaining clamp. The retaining clamp exhibited physical evidence consistent with adverse electrical activity and contact arcing. The source of the fire's ignition was caused by contact arcing between the energized cable and the metal retaining clamp.
4. Wear and degradation of the components allowed an unfused adverse electrical event to develop at the energized cable that connected to the engine starter where it was in direct contact with the metal retaining clamp at the right side of the engine compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. As a reference for this report, the right and left sides are designated as if the driver was seated in the driver's position facing forward towards the engine compartment. No visible fire damage was observed on the exterior of the vehicle.

Interior Inspection:

No visible fire damage was observed in the cargo area or driver's position of the vehicle.

Engine Compartment Inspection:

Fire pattern analysis and an examination of the remaining physical evidence within the engine compartment, revealed the fire originated on the right side of the engine at a retaining clamp attached to the engine block. The battery cable to the engine starter was routed from the battery at the right side of the compartment through two retaining clamps at the right side of the engine block. The first clamp is located at the front of the engine and the second is located toward the rear. The fire occurred at the second retaining clamp. The first clamp and portions of the cable running through the clamp were undamaged and the clamp is lined with rubber insulation around the interior surfaces and edges. At the second clamp the cable was completely severed and both ends of the circuit exhibited globular shaped molten copper consistent with electrical activity and arching. The second retaining clamp was bare of any insulating material and exhibited a single arc point that penetrated the wall of the retaining clamp. Minor fire damage was noted to nearby wiring insulation and other combustible components.

Undercarriage Inspection:

No visible fire damage was observed at the undercarriage of the vehicle.

Fuse Panel Inspection:

The fuse panel was not damaged by the fire.

Area of Fire Origin:

The fire was determined to have originated within the engine compartment of the involved LLV. The specific area of origin was at and around the battery cable routed at the right side of the engine that powered the engine starter that sustained an adverse electrical event.

Potential Contributing Factors:

The specific ignition sequence and cause of the fire was determined to be the direct result of an electrical conductor being chaffed and worn causing the exposure of the electrical conductor. This action resulted in contact arcing, which ignited the protective insulation on the conductor and then spread to the other combustible materials located nearby.

Wear and degradation of components allowed an adverse electrical event to develop at the battery starter cable where it was in direct contact with the retaining clamp at the right side of the engine.

Evidence Collected:

No physical evidence was collected and retained during the inspection.

Service Records:

A review of the service records for the past year did not reveal any indications of repairs made in the specific area of the cable and retaining clamp.

Witness Statement:

It was reported by maintenance personnel, the fire occurred when the vehicle was attempted to be started. The carrier, Shaine Kelly, heard a "pop" and then saw smoke. The fire was quickly extinguished with a portable fire extinguisher.

Multiple attempts were made to interview the carrier with no return phone calls.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Hubert T. Peete

Hubert T. Peete, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers
Technical Fire Manager

Attachments: Photographs, CV

May 2, 2018
RCG File No. 53006532

Photograph 1
Front view of the LLV.



Photograph 2
Driver side view of the LLV.



May 2, 2018
RCG File No. 53006532

Photograph 3
Rear view of the LLV.



Photograph 4
Mail side view of the LLV.



May 2, 2018
RCG File No. 53006532

Photograph 5

View of the cargo area.



Photograph 6

View of the driver's area.



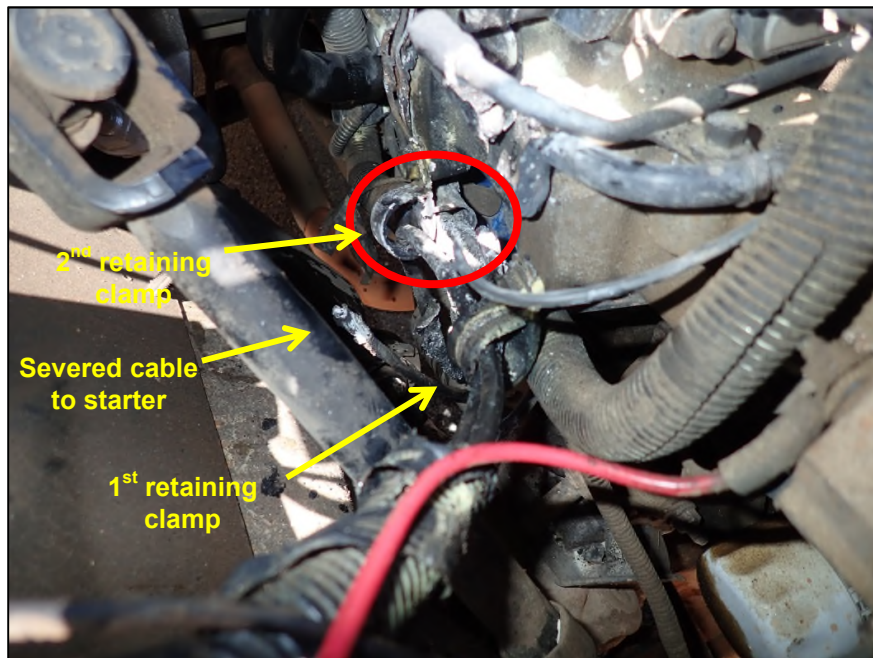
Photograph 7

View of the engine compartment.



Photograph 8

View of the right side of the engine with the origin area notated in red.



Photograph 9

Close up view of contact arcing on the retaining clamp.



Photograph 10

Close up view of electrical activity at the battery cable to the engine starter.



May 2, 2018
RCG File No. 53006532

CVs



HUBERT T. PEETE, IAAI-CFI, CFEI, CVFI FIRE CONSULTANT

Mr. Peete began his fire service career at the age of 16 in 1983, as an Explorer Scout with his hometown fire department. He developed an interest in the origin and cause of fires early in his career and has pursued to increase his knowledge of the subject throughout most of his life. He continued as a volunteer firefighter and officer with his home town for 20-years. After attending college, he entered service with the City of Pelham Fire Department in Pelham, Alabama. He served in many capacities and retired as a company officer in December 2015, after 25-years of service.

Mr. Peete has spent the last 15-years working as a private fire consultant and has investigated over 1000 fires. He has been certified and testified as an expert witness in both Federal and Circuit courts.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

- Bachelor of Science, Public Safety Administration – Athens State University, Athens, Alabama - 1998
- Associate in Applied Science, Fire Science Management – Shelton State Community College, Tuscaloosa, Alabama – 1996
- Montevallo High School – Montevallo, Alabama - 1985

EMPLOYMENT HISTORY

2017 – Present	Rimkus Consulting Group, Inc.
2003 – 2017	Crain & Associates, Inc., Investigator
2002 – 2003	Crain Massengale, Inc., Fire Scene Technician
1990 – 2015	City of Pelham Fire Department, Fire Lieutenant
1995 – 2000	City of Montevallo Fire Department, Fire Marshal



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
3620 Horizon Drive, Suite 200
King of Prussia, PA 19406
(888) 623-1460 Telephone
(610) 941-1288 Facsimile

August 15, 2016

Re: RCG File No: 47702022
LLV Number: 3309765
VMF Location: 1900 Byberry Road in Philadelphia, Pennsylvania
Subject: Final Report

Rimkus Consulting Group, Inc. was requested to examine LLV 3309765, VIN 1GBCS10A8P2917759. The vehicle was examined at the USPS Philadelphia NDC Aux VMF; located at 1900 Byberry Road in Philadelphia, Pennsylvania, 19006. The fire incident reportedly occurred at 3745 Buck Road in Huntingdon Valley, Pennsylvania.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on June 16, 2016. Our work to complete this assignment was performed by Fire Consultant Jonathan Sivils, IAAI-CFI. This report and case was reviewed by Mr. Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at and around the electrical connection from the starter.

3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the damage and the possibility of multiple potential ignition sources to include a potential back fire situation or an adverse electrical event involving the positive electrical conductor to the starter.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. Severe fire damage was observed to the front of the vehicle. The hood and roof along the front were consumed. All of the window glass in the vehicle was broken. The roof along the rear was intact. The front tires were burned while the other rear tires remained intact.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred to the front dashboard area. The dashboard had melted and the majority of the electrical wiring and other components that were housed within the dashboard were severely damaged. The electrical wiring that could be examined did not display any physical evidence of adverse electrical activity.

Engine Compartment Inspection:

The engine compartment was examined. Flame damage was observed throughout the engine compartment with the most severe damage in the compartment located along the rear of the engine closest to the firewall on the right side. The plastic and rubber engine components were consumed. The air filter components were severely damaged by fire within the air filter housing. This could potentially be due to the attempt to repeatedly start the vehicle causing gasoline vapors to build up and ignite in this area.

The fuel system was examined and was revealed to be the original GM fuel filter system which was severely damaged. The fuel lines were routed along the rear of the engine. The fuel filter was located just to the rear of the engine on the left side. The filter was intact but all fuel lines to the engine were consumed. The battery for the vehicle is located at the front right side of the engine compartment and had sustained severe fire damage and was nearly consumed. All battery cables remained intact with no signs of adverse electrical activity. The starter was examined and found to be intact. The electrical conductors for the starter revealed they were broken near the frame of the vehicle and showed signs of adverse electrical activity at the break. There was no indication that the LLV was equipped with a High Energy Ignition (HEI) Distributor.

Undercarriage Inspection:

Examination of the undercarriage revealed only distortion to the paint closer to the front, indicating heat travel from the engine compartment area or front of the vehicle. The involved LLV was mounted on an AM General frame which was intact. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed it was consumed by fire.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage, witness statements and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment of the vehicle near the starter. The specific ignition sequence and cause of the fire was an electrical event that occurred in the conductor for the starter that came in contact with the metal frame.

Potential Contributing Factors:

A new starter was installed on this vehicle in February 2016. A potential backfire situation cannot be eliminated as well due to severe fire damage in the air filter housing and the attempt to start the vehicle multiple times.

Evidence Collected:

No evidence was collected.

Interviews:

On June 16, 2016, a telephone interview was conducted with the driver of the vehicle. He reported the following information:

- On the day of the fire at approximately 4:45 P.M., the vehicle would stall out while he was driving.
- He attempted to start the vehicle but it kept stalling.
- He called the post office for a tow truck and replacement vehicle.
- While waiting for a replacement vehicle, he heard a hissing sound from the engine compartment. He exited the vehicle and saw flames under the vehicle on the right side.

- He immediately called 911.
- No other issues or problems were reported with the vehicle on the day of the fire.

Service Records:

A review of the service records indicated that the starter was replaced in the LLV in February 2016, and no other repairs were observed that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jonathan K. Sivils

Jonathan K. Sivils, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 15, 2016
RCG File No. 47702022

Photograph 1
Right front of vehicle.



Photograph 2
Right side of vehicle



August 15, 2016
RCG File No. 47702022

Photograph 3
Rear of vehicle.



Photograph 4
Left side of vehicle.



August 15, 2016
RCG File No. 47702022

Photograph 5

Right side of engine compartment.



Photograph 6

Right side of engine compartment and battery.



August 15, 2016
RCG File No. 47702022

Photograph 7

Conductor for starter on the underside of vehicle.



Photograph 8

Conductor for starter removed.



Photograph 9

Conductor for starter.



Photograph 10

Conductor for starter.



August 15, 2016
RCG File No. 47702022

Photograph 11

Area of frame where starter conductor was routed.



August 15, 2016
RCG File No. 47702022

CVs



Jonathan Sivils, IAAI-CFI, FIT, CFEI Fire Consultant

Mr. Sivils is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, as well as a Fire Investigation Technician (IAAI-FIT) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). He also holds an Associate of Science Degree in Fire Protection Technology. In a career spanning more than 25 years in the fire service, he has investigated and determined the origin and cause of more than 800 fires, to include commercial structures, residential structures, vehicles, marine and heavy equipment. He has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Sivils is a court-qualified expert witness in Criminal and Civil proceedings. Mr. Sivils has extensive training in fire and criminal investigations.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S Fire Protection Technology – Americus University, Washington D.C. – 2002
Bucks County Fire Chiefs and Firefighters Association
Bucks County Fire Marshal Association
International Association of Arson Investigators
National Association of Fire Investigators
National Fire Protection Association
Pennsylvania Association of Arson Investigators

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2012 – 2015	Donan Engineering Company, Inc.
2007 – 2012	Bucks county Fire Marshal Office, Bucks County, Pa
2005 – 2007	U.S. Department Of Defense Fire and Emergency Services
2009 – 2010	NEFCO Fire Investigations, Philadelphia, Pa
2003 – 2005	U.S. Department of Homeland Security
1998 – 2003	U.S. Department Of Defense Fire and Emergency Services
1993 – 2010	Penndel Fire Company, Penndel, Pa



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
9125 Guilford Road Suite 108
Columbia, Maryland 21046
(877) 872-2999 Telephone
(410) 872-9111 Facsimile

August 30, 2018

Re: RCG File No: 47510108
LLV Number: 3310279
VMF Location: 8403 Lee Highway in Merrifield, Virginia
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 3310279, VIN 1GBCS10A0P2918291. The vehicle was examined at the USPS Vehicle Maintenance Facility located at 8403 Lee Highway in Merrifield, Virginia. The fire incident reportedly occurred at 8474 Summer Breeze Lane in Springfield, Virginia on August 6, 2018.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on August 22, 2018. Our work to complete this assignment was performed by Fire Consultant Charles W. Feeley, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 Standard for "Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the LLV 3310279.
2. The area of fire origin was determined to be on the left side of the engine where the flexible fuel lines transition between the frame mounted rigid lines to the engine mounted rigid fuel filter and return lines.

3. The cause of the fire was determined to be ignition of leaking gasoline vapor where a flexible fuel high pressure or return line failed/cracked and leaked due to close proximity and long-term heat exposure from the exhaust header (1 1/4") and transition flange (5/8").

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. There was fire, heat and smoke damage to the exterior front of the vehicle. The left side of the hood sustained the most severe fire damage. The panel between the hood and the windshield sustained fire, heat, and smoke damage at the grill. The front windshield sustained fire, heat and smoke damage at the center at the base. The front left and right fenders sustained heat and smoke damage at the edge nearest to the hood.

At the time of the inspection, all of the tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the tires, brakes, brake lines, wheels or axles had failed. All doors were observed in working order at the time of the fire. There was no evidence to indicate the vehicle had been involved in an accident.

No damage was observed to the exterior cargo area of the vehicle with the exception of blistered paint on the hood corresponding with fire spread from the direction of the engine and operator compartments. Based on the fire patterns observed, it was determined the fire initiated within the engine compartment near the bulkhead/dashboard then progressed into the operator's compartment through the windshield and manufactured holes in the bulkhead.

Interior Inspection:

The rear cargo area sustained no fire or heat damage. The cargo area sustained smoke damage which was most severe at the entry from the driver's compartment. The driver's compartment sustained fire, heat and smoke damage. The headliner and bulkhead between the driver's compartment and cargo area sustained fire and heat damage. The dashboard sustained the most severe damage at the mail side. The heater fan and duct sustained fire and heat damage. The steering wheel sustained heat damage to the left side. The ignition was intact.

The fuse panel was undamaged by the fire. The bundled wiring harnesses on the driver's side connecting from the fuse panel towards the Engine Control Module (ECM) sustained severe fire damage. The ECM had been positioned in the center of the dash and was observed with severe fire damage. The burn through hole in the bulkhead was observed to the left of the ECM. The remnants of an electric fan was found in the fire debris along the burned through area of the bulkhead.

Engine Compartment Inspection:

The underside of the hood sustained fire and heat damage. The left side of the hood sustained the most severe damage. The engine compartment was examined. The vehicle was equipped with a GM 2.5 L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had an electronic ignition system. There was fire, heat and smoke damage within the engine compartment. The left side of the engine compartment sustained the most severe damage.

The battery for the vehicle was located at the front right side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be intact with heat damage to the upper surface. No adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The coolant and power steering fluid reservoirs were undamaged. The power steering hose was intact. The brake fluid reservoir positioned on the right rear side of the engine compartment sustained heat damage to the top surface. The heater hoses sustained heat damage on the left side of the engine compartment. The alternator and associated wiring was intact. The serpentine belt was intact. The flexible fuel line positioned on the left side of the engine compartment had been consumed. The most severe damage was forward of the supply line. The exhaust manifold displayed patterns consistent with an ignitable liquid being sprayed onto the surface.

Examination of the origin area evidenced the total consumption of the flexible fuel high pressure and return lines. Measurements of the engine mounted rigid fuel line evidenced a space between the flexible lines and the engine exhaust header and transition flange ranged from 5/8" to 1 1/4 ". The oxygen sensor was also in close proximity to the flexible fuel line.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV

was mounted on a GM general frame and was undamaged. The fuel lines were positioned within the open frame to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

Examination of the fuse panel revealed no visible fire damage to the panel or any of the fuses. The plastic housing of the fuse panel was intact as were all of the fuses and connections. Several fuses were open. The open fuses were as follows: The 20 amperes fuse labeled ignition, 10 ampere fuse labeled ECM, 25 ampere fuse labeled wipers and 15 ampere fuse labeled Hazard lights. The wiring harness for the involved fuses had sustained fire damage within the engine compartment.

Area of Fire Origin:

The fire originated in the engine compartment near the left rear section of the engine, where a fuel leak developed, the vapors of which were ignited potentially remotely by the engine alternator or by the exhaust manifold.

Potential Contributing Factors:

Normal wear and degradation of the flexible fuel lines located within the area of origin involving heat exposure to the fuel lines located in close proximity to the engine exhaust header, flange, and exhaust pipe. Mechanical damage while replacing the oxygen sensor may have also contributed to the cause of the fire.

Evidence Collected:

No evidence was recovered.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records it was determined that the oxygen sensor had been replaced in the area of origin.

Interview:

Mr. was interviewed on August 22, 2018, and provided the following information. While on his route he noticed that the vehicle began to run rough. He called the office at approximately 2:30 P.M. to report the problem. He pulled over to the side of the road in front of 8474 Summer Breeze Lane. He noticed something while exiting the vehicle and stepped over to the sidewalk to wait for a replacement vehicle when all the sudden smoke started coming out from the engine compartment. He called 911. The engine compartment became fully engulfed in fire. He noticed that fire was dripping onto the ground under the engine compartment. After the flames were extinguished, he retrieved the mail.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles W. Feeley

Charles W. Feeley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curricula Vitae

August 30, 2018
RCG File No. 47510108

Photograph 1

A view of the exterior front of the vehicle.



Photograph 2

A view of the exterior left side of the vehicle.



August 30, 2018
RCG File No. 47510108

Photograph 3

A view of the exterior rear of the vehicle.



Photograph 4

A view of the exterior right side of the vehicle.



August 30, 2018
RCG File No. 47510108

Photograph 5

A view of the interior cargo area.



Photograph 6

A view of the interior driver compartment left side.



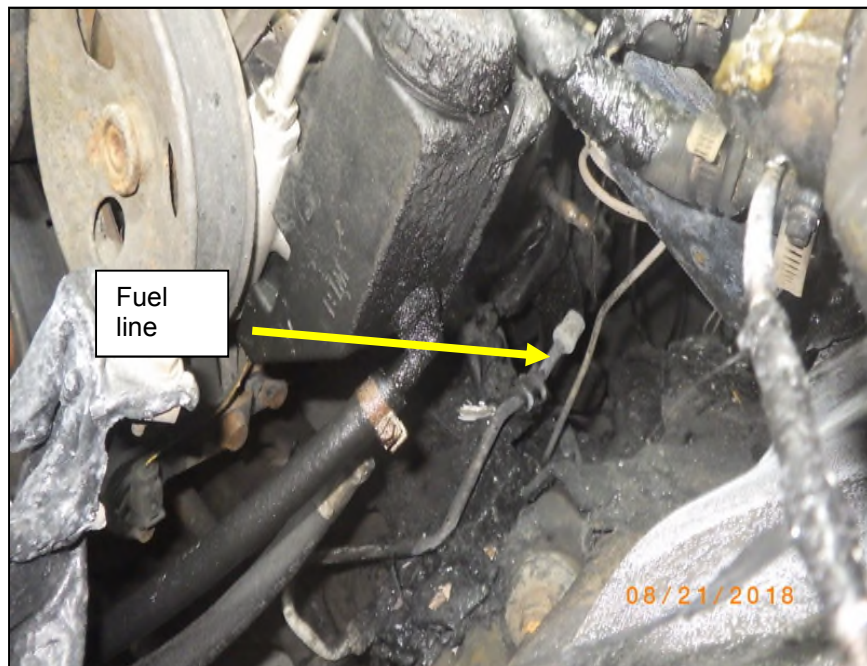
Photograph 7

A view of the battery on the right side of the engine compartment.



Photograph 8

A view of the left side of the engine compartment.



August 30, 2018
RCG File No. 47510108

Curricula Vitae



**CHARLES FEELEY, I.A.A.I., C.F.E.I., C.F.I., P. I.
FIRE CONSULTANT**

Mr. Feeley had been employed by the Baltimore City Fire Department for 35 years. In this capacity he had been involved in many different emergency positions including Fire Fighter, Lieutenant, Captain, Chief Safety Officer, Battalion Commander and Division Chief.

Mr. Feeley has completed numerous educational seminars and continuing educational courses.

Mr. Feeley investigated over 550 fires in four years as an investigator and in excess of 5,000 fires as an incident commander at fire scenes. He has given expert testimony in civil and criminal court cases. He supervised the Office of the Fire Marshal in Baltimore City. He also supervised special projects such as the Arson Task Force, juvenile fire setters program, an educational intervention program and public education programs.

At Rimkus Consulting Group, Mr. Feeley has conducted over 500 fire origin and cause determinations that include, but are not limited to, assignments involving residential, commercial, industrial, passenger and commercial vehicles, marine, farm implement/equipment, appliance and electrical equipment related fires.

Mr. Feeley has been recognized for his achievements by being the recipient of awards that include Distinguished Unit Citation, Meritorious Conduct Award, Exemplary Performance, and Distinguished Service Award.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

National Fire Academy
National Nuclear Security Administration
United States Department of Justice, New Mexico Tech.
Department of Homeland Security
National Association of Fire Arson Investigators
United States Department of Justice, Anniston AL.
National Association of Fire Investigators.
Certified Fire and Explosion Investigator, N.A.F.I Certification
Certified Fire Investigator, International Association of Arson Investigators
Licensed as a Private Investigator in the State of Delaware

EMPLOYMENT HISTORY

2006 – Present	Rimkus Consulting Group, Inc.
1970 – 2006	Baltimore City Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1661 International Drive, Suite 400
Memphis, Tennessee 38120
(855) 782-4228 Telephone
(615) 883-4118 Facsimile

June 6, 2019

Re: RCG File No: 100002149
LLV Number: 3310926
VMF Location: 685 South B.B. King Boulevard Memphis, Tennessee
Subject: Preliminary/Final Report

Dear

A fire incident reportedly occurred at 101 Cunningham Drive in Ripley, Mississippi on April 30, 2019 involving US Postal Service vehicle LLV 3310926 with VIN 1GBCS10A6P2918814. The vehicle was examined at the USPS Vehicle Maintenance Facility located at 685 South B.B. King Boulevard in Memphis, Tennessee.

In the course of our work, we photographed, documented and inspected the fire damaged vehicle on May 8, 2019. Our work to complete this assignment was performed by Fire Consultant Lamar Childress, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The vehicle sustained moderate fire damage to the engine compartment and no damage to the passenger or cargo compartments. Based upon fire patterns observed, it was determined that the fire originated within the engine compartment.
2. A radial type fire pattern was observed on the exterior, rear of the vehicle's hood. An examination of the engine compartment revealed that the fire originated on the driver's side, rear of the engine below the vehicle's bulkhead.

3. Fire movement and intensity patterns indicated that the fire originated from the area of the distributor and communicated upward causing damage to the vehicle's hoses and electrical wiring harness.
4. The distributor sustained severe fire damage and the cap was completely consumed.
5. During our examination of the area of origin, we discovered no evidence of fluid leaks that would have contributed to the cause of the fire.
6. Through fire pattern analysis and examination of remaining physical evidence, the specific ignition sequence and cause of the fire was determined to be an overheated rotor of the vehicle distributor. The excessive heat caused the fire to ignite and communicate upward damaging the vehicle's wiring harness and hoses in close proximity to the area of origin.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. A radial fire pattern was present near the center, rear of the vehicle's hood. Based on the fire patterns observed, it was determined the fire originated inside the engine compartment.

Interior Inspection:

The mail/cargo area of the vehicle did not sustain fire, heat or smoke damage.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The vehicle's battery was in place and received no damage during the fire event.

A fire pattern was observed on the underside of the vehicle's hood. The pattern indicated that the fire originated on the driver's side of the engine compartment below the vehicle's bulkhead where the distributor was mounted to the side of the engine. The fire communicated upward causing damage to the vehicle's hoses and electrical wiring harness.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

Examination of the fuse panel revealed no visible fire damage to the panel or any of the fuses. The plastic housing of the fuse panel was intact as were all of the fuses and connections.

Area of Fire Origin:

Based upon fire patterns and the remaining physical evidence, it was determined that the fire originated at the Driver's side, rear of the engine compartment where the vehicle distributor is mounted to the engine. The distributor was severely damaged and the cap was completely consumed. A fire pattern was observed on the side of the engine where the distributor was located. The observed pattern indicated that the fire communicated upward causing damage to the vehicle's hoses and electrical wiring harness.

Potential Contributing Factors:

The vehicle having trouble starting and "stalling" several times is a symptom of a malfunctioning distributor. The continued operation of the vehicle caused the rotor to overheat causing the fire event.

Evidence Collected:

Evidence collected included the vehicle distributor and damaged portions of the spark plug wiring.

Interviews

An interview was conducted with the Ripley, Mississippi Post Master. She reported the following:

- The route driver, Mr. reported that the vehicle was "stalling" during his route and had trouble starting. Once the vehicle was running, both parties decided to continue the route. Mr. noticed smoke and stopped the vehicle.

Service Records:

A review of the service records was completed. The vehicle's distributor and spark plug wires were replaced on July 6, 2018.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Lamar R. Childress

Lamar R. Childress, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

June 6, 2019
RCG File No. 100002149

Photograph 1

Radial type fire pattern on vehicle's hood.



Photograph 2

Underside of vehicle's hood, note fire pattern.



Photograph 3

Area of origin where distributor was located.



Photograph 4

Area of origin with distributor removed, note fire pattern.



June 6, 2019
RCG File No. 100002149

Photograph 5
Damaged distributor.



June 6, 2019
RCG File No. 100002149

Curriculum Vitae



Lamar R. Childress, CFI, CFEI, CFI(V)

Fire Consultant
Fire Division

Background

A 21-year veteran of the fire services industry, Mr. Childress is a Certified Fire Investigator (CFI), Fire Investigation Technician (FIT) and holds the Motor Fire Vehicle Endorsement through the International Association of Arson Investigators. He is also a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) through the National Association of Fire Investigators.

He has also completed the Fire/Arson Investigation course at the National Fire Academy. Mr. Childress is also Fire Inspector I-II Certified through the International Code Council and is licensed as a Fire Codes Inspector in the State of Tennessee. He is a certified Hazardous Materials Technician and Life Safety Compliance Officer I- II through the Tennessee Commission on Firefighting.

The last 14 years has been spent conducting origin and cause investigation and analysis of fire and explosion incidents as the Fire Marshal for the City of Jackson, TN. His responsibilities include supervision and management of on-scene fire investigations, criminal follow-up investigations of incendiary fires, and development of the fire prevention program for the department.

As a forensic fire expert, he conducts on-scene investigation and analysis of fire and explosion incidents including origin and cause determination. He has also served as a witness, providing testimony in fire related court proceedings.

Contact Information

(888) 235-7423

lchildress@rimkus.com

1661 International Drive,
Suite 400
Memphis, TN 38120



Rimkus Consulting Group, Inc.
650 N.E. Holladay Street, Suite 1600
Portland, Oregon 97232
Telephone: (877) 677-6157

December 4, 2019

Re: RCG File No: 100017667
LLV Number: 3311567
VMF Location: 255 River Avenue Eugene, Oregon
Subject: Preliminary/Final Report

On October 16, 2019, a fire occurred to a 1993 Grumman LLV 3311567, while operating near 3883 Blanton Road in Eugene, Oregon. The vehicle identification number was 1CBCS10A8P2919561. It was reported that the postal carrier was delivering mail and ran over a “football” sized rock with the right front tire. Approximately one hour later, she observed smoke coming from the hood of the vehicle. On October 23, 2019, Rimkus Consulting Group, Inc. was retained to examine LLV 3311567.

On October 25, 2019, we conducted an examination of the LLV at the Eugene facility located at 255 River Avenue in Eugene, Oregon. In the course of our work, we examined the vehicle, documented the vehicle with photographs, and reviewed the vehicle maintenance records. This assignment was performed by J. Christopher Lyman, IAAI-CFI (V). This report was reviewed by David R. Meyers, IAAI-CFI (V); Technical Fire Manager.

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 – “Guide for Fire and Explosion Investigations” and N.F.P.A. 1033 - “Standard for Professional Qualifications for Fire Investigator.”

Conclusions

1. The fire originated in the engine compartment of the LLV.
2. The specific area of origin was located at the battery on the right side of the engine compartment.
3. The vehicle battery became dislodged from the battery mounts and arced to the brake lines that ignited nearby combustible materials and fluids.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior in a clockwise pattern. We observed that the front half of the vehicle was covered with a blue tarp. We removed the tarp and observed intense fire and heat patterns to the front of the vehicle, hood, and right front wheel well area. The left side windshield glass was missing due to fire suppression efforts. There was no physical evidence observed on the exterior of the LLV that would have caused or contributed to the cause of the fire.

Interior Inspection:

We examined the interior of the vehicle. We observed fire and heat patterns along the dash area and to the interior roof. Fire consumed the fiberglass firewall along the left side. We observed melting to the conductors underneath the dash area along the right side. There was no physical evidence observed on the interior of the LLV that would have caused or contributed to the cause of the fire.

Engine Compartment Inspection:

We forcibly opened and removed the hood to examine the engine compartment. We observed smoke and soot damage to the underside of the hood. We observed that the battery was lying on its side with the top battery terminals facing the right side of the vehicle. The battery tray was melted in addition to the left side plastic battery mount. We observed arcing to the brake lines that were in close proximity to the battery terminals. We examined the electrical conductors from the battery terminals and did not observe any electrical arcs or failure to the vehicles electrical system. We examined the alternator and starter and did not observe any failures or malfunction. The oil level and transmission fluid levels were at an acceptable level. Based on the fire patterns observed, the battery was determined to be the point of origin. The vehicle was equipped with a 2.2 liter four-cylinder engine with standard ignition coil.

Undercarriage Inspection:

We examined the undercarriage of the vehicle and did not observe any failures or malfunctions that would be consistent with the causation of this fire. The vehicle was mounted on a GM frame.

Fuse Panel Inspection:

Examination of the fuse panel did not reveal any fire damage consistent with the causation of this fire.

Area of Fire Origin:

The area of origin was the right side of the engine compartment.

Potential Contributing Factors:

When the carrier struck the football sized rock in the roadway with the right front tire that led to the battery becoming dislodged from the battery mount.

Evidence Collected:

No evidence was collected.

Witness Statement:

The carrier stated that she was delivering mail and ran over a "football" sized rock with the right front tire. Approximately one hour later, she observed smoke coming from the hood of the vehicle and the vehicle shut off. She observed flames coming from the hood shortly thereafter. She contacted the VMF Manager to report the incident. He instructed her to call 911 to report the fire.

Service Records:

A review of the involved LLV service records were requested and reviewed. The records did not indicate that a prior service conducted to the vehicle contributed to the cause of this fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jeremy C. Lyman

Jeremy C. Lyman, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

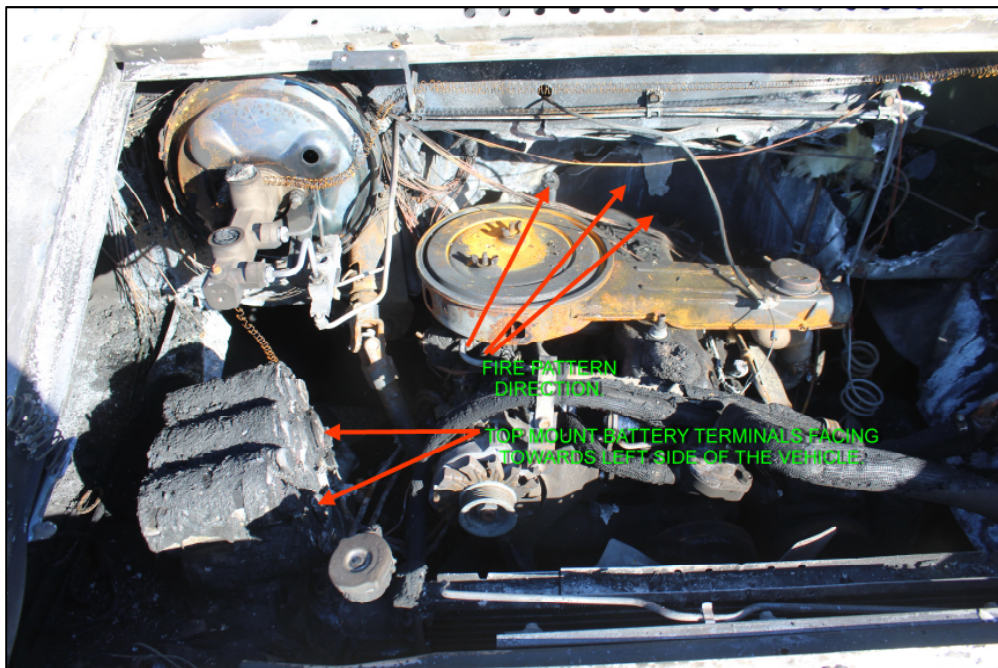
Attachments: Photographs, Curriculum Vitae

December 4, 2019
Rinkus File No. 100017667

Photograph 1
Subject LLV, 3311567.



Photograph 2
Right side engine compartment; battery position following the incident.



Photograph 3

Arcing observed the vehicle brake lines.



Photograph 4

Interior photograph of the affected LLV.



December 4, 2019
Rimkus File No. 100017667

Photograph 5

Undercarriage of the affected LLV.



Photograph 6

Exemplar battery showing position prior to fire incident; note the position of the battery terminals.



December 4, 2019
Rinkus File No. 100017667

Curriculum Vitae



Jeremy (Chris) Lyman, C.F.I., C.F.I.V.

Fire Consultant
Fire Division

Background

Along with a B.S. in Fire Science Administration, Mr. Lyman is a Certified Fire Investigator, Certified Fire Investigator-Vehicle, Certified Fire Inspector II, Fire Plans Examiner and Fire Instructor III.

He has over 20 years of experience and knowledge in the fire service industry with the last 12 years as a full-time fire investigator, fire captain, deputy fire marshal, and safety professional.

Mr. Lyman is highly experienced in the interpretation and enforcement of the International Fire Code as it relates to fire, life safety and egress in existing buildings and new construction as well as fire protection systems. In addition, Mr. Lyman has taught fire investigation and related courses through Umpqua Community College.

In addition to over 500 fire investigations, Mr. Lyman's areas of expertise include fire origin and cause investigations, researching codes and providing training and evaluating fire investigators. Throughout his career, he has conducted many fire and explosion investigations on commercial and residential structures as well as heavy equipment and automotive systems.

Contact Information

(877) 677-6157

clyman@rimkus.com

650 N.E. Holladay Street,
Suite 1600
Portland, OR 97232



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road, Suite 224
Atlanta, Georgia 30339
(770) 436-9399 Telephone
(770) 438-2189 Facsimile

December 11, 2018

Re: RCG File No: 50808803
LLV Number: 3312427
VMF Location: 1605 Boggs Road Duluth, Georgia
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine a vehicle fire involving US Postal Service LLV 3312427, with a vehicle identification number (VIN) of 1GBCS10A1P2920390, which occurred on November 16, 2018. During the course of our work, we examined, documented, and photographed the fire damaged LLV on November 20, 2018.

The vehicle was inspected. Our work to complete this assignment was performed by Fire Consultant Gregory M. Cloer, IAAI-CFI. A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated within the engine compartment of the involved LLV.
2. The specific area of origin was at and around a battery cable routed directly behind the alternator that sustained an adverse electrical event.
3. The specific ignition sequence and cause of the fire was determined to be an adverse electrical event at the large diameter battery cable that was identified routed through a retaining P-clamp along the side of the engine. The battery

cable exhibited physical evidence consistent with adverse electrical activity along the retaining clamp. The retaining clamp exhibited physical evidence consistent with adverse electrical activity and arcing. The source of the fire's ignition was resistance heating of the battery cable caused by a direct short between the cable and the retaining ring.

4. Wear and degradation of components allowed an unfused adverse electrical event to develop at the battery hot lead where it was in direct contact with the retaining clamp below the power steering pump within the engine compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. Minor fire damage was observed to the engine compartment of the vehicle. For the purpose of this report, the right side of the vehicle refers to the driver's side of the vehicle, and the left side refers to the mail side of the vehicle. There was no exterior fire movement patterns observed on the exterior sides of the vehicle. A smoke pattern was observed along the top of the hood and vent near the base of the windshield.

There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured.

Interior Inspection:

The interior inspection revealed no fire movement patterns or smoke damage to any areas of the interior.

Engine Compartment Inspection:

This vehicle was equipped with a 2.5L fuel injected engine and a standard ignition coil. The engine oil and transmission fluids were observed to be within their respective normal operating range.

Fire damage was observed along the driver's side of the engine in the area of the positive battery cable that was routed through a P-clamp that was mounted along the side of the engine. Fire damage was also observed to the engine wiring harness located along the driver's side of the engine and along the top interior side of the hood. The fire damage observed was consistent with the fire originating along the driver's side of the engine in the area of the positive cable and P-clamp.

Examination of the battery cables revealed that the negative cable was intact and had sustained fire damage. The positive cable, which ran from the battery to the starter, had sustained fire damaged along the left side of the engine. The cable had been routed through an aluminum screw mount cable P-clamp. Most of the positive battery cable insulation had been consumed during the fire event. A notched area consistent to that of an adverse electrical event was observed along the positive battery cable. An examination of the cable P-clamp revealed that the positive cable had arced through the back of the clamp.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

The fuse panel and fuses were observed intact and did not sustain any fire damage. A 15-ampere fuse was observed "blown". This fuse was located in the slot for the 12-volt accessory. A 20-ampere fuse was the recommended fuse to protect the 12-volt accessory circuit. The blown fuse was not related to or a contributing factor in the cause of this fire.

Area of Fire Origin:

The fire originated on the right side of the engine compartment, where the positive battery cable had been routed through an aluminum screw mounted cable P-clamp.

Potential Contributing Factors:

The cause of the fire was determined to be the result of the positive battery cable chaffing against the aluminum screw mounted cable P-clamp, exposing the cable to the cable P-clamp. The positive cable then arced to the cable P-clamp, ignited the insulation around the positive cable, and then progressed to other nearby combustible materials.

Evidence Collected:

No physical evidence was collected at the time of our initial inspection.

Interviews

On November 20, 2018, an email was sent to Mrs. requesting the carrier, Mr. to call for an interview. There has been no email response or calls from either Ms. or Mr.

Service Records:

A review of the provided service records for the involved LLV was conducted. According to the records the last Preventive Maintenance was performed in August, 2018. There was work performed on the battery in July of 2018. Engine repairs and other work were performed on the LLV in September of 2018. It is inconclusive if the maintenance performed contributed to the chaffing of the wiring or the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

December 11, 2018
RCG File No. 50808803

Photograph 1

View of the driver's side and front exterior.



Photograph 2

View of the passenger's side and rear exterior.



December 11, 2018
RCG File No. 50808803

Photograph 3

View of the engine compartment.



Photograph 4

View of the fire origin.



Photograph 5

View of the positive battery cable and P-clamp.



Photograph 6

A closer view of the adverse electrical activity to the battery cable.



Photograph 7

The P-clamp, observe the damage to the clamp.



Photograph 8

The undercarriage, no fire damage observed.



December 11, 2018
RCG File No. 50808803

Curriculum Vitae



**GREGORY M. CLOER, C.F.I.
FIRE CONSULTANT**

Mr. Cloer is a Certified Fire Investigator (C.F.I.) by Georgia P.O.S.T., NPQ, N.F.A. and IAAI for fire/arson investigation, and is certified by Georgia P.O.S.T. as a basic peace officer. Mr. Cloer has also served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting & prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator. Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. Mr. Cloer has testified as an expert in criminal court related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certification, P.O.S.T. Basic and Advanced Arson Investigation (Currently Fire Investigator I and II)
Certification, P.O.S.T. Basic Peace Officer
N.F.A. Fire/Arson Investigation
P.O.S.T. Arson Investigator
IAAI-CFI
NPQ Certified Fire Investigator
NPQ Fire Instructor

TRAINING/CERTIFICATES

Certified Fire Investigator • Fire Instructor • Peace Officer • EMT • Paramedic • Advanced Fire Investigator • Advanced Fire Cause & Origin Expert Witness

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1986 – 2015	Cobb County Fire and Emergency Services

DETAILED PROFESSIONAL EXPERIENCE:

RIMKUS CONSULTING GROUP, INC.

2015 - PRESENT

Fire Consultant

Conduct fire, arson, and explosive investigations including residential, commercial, and vehicular losses for clients. Collect and preserve evidence ensuring a precise chain of custody. Conduct interviews with victims, property owners, witnesses, investigators, and pertinent third party organizations. Photograph scenes and prepare detailed written investigative reports as to the conclusions and opinions of the subject loss. Testify in related depositions and trials.



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road, Suite 224
Atlanta, Georgia 30339
(770) 436-9399 Telephone
(770) 438-2189 Facsimile

August 21, 2018

RCG File No: 50808417
LLV Number: 3312561
VMF Location: 3900 Crown Road SW Atlanta, Georgia
Subject: Preliminary/Final Report

Dear

On July 21, 2018, a fire involving USPS mail vehicle LLV 3312561, VIN 1GBCS10A5P2920537 reportedly occurred while the carrier was on his route at 1500 Cook Road in Oxford, Georgia. The vehicle was manufactured by General Motors in 1993 and was a Grumman model LLV-93 RH.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Atlanta VMF located at 3900 Crown Road SW in Atlanta, Georgia. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on August 6, 2018. The vehicle examination was conducted by Fire Consultant Mathew C. Bolen, IAAI-CFI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations" and NFPA 1033 Standard for "Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment in the area of the top, center portion of the engine.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a leak in the fuel injector throttle body and the atomized gasoline vapor coming in contact with a competent ignition source, in the immediate vicinity of, or within, the air filter canister.
5. The rear interior storage mail/compartament was not involved with this fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The front grill and lights of the LLV were observed to be intact with no fire damage. A burn through hole and heat damage was observed on the hood in the center of the engine compartment, from the middle of the compartment towards the bulkhead.

No damage was observed to the exterior cargo area of the vehicle. Based on the fire patterns observed, it was determined the fire initiated within the engine compartment near the center and bulkhead area then progressed within the upper portion of the engine compartment.

The exterior of the vehicle was mostly unremarkable with only normal wear and tear around most of the vehicle. The driver's side, rear and mail side had normal scratches and dents from vehicle use. The front of the vehicle did have heat damage to the center of the hood near the windshield around the vents above the engine compartment. The front windshield was also damaged from the smoke and heat of the fire. The windshield did crack from the heat and was covered in black soot from the fire.

Interior Inspection:

The interior cargo/mail area sustained minor smoke damage. Fire patterns indicated the fire originated within the engine compartment and progressed towards the operator's

compartment. Fire patterns indicated this was the result of the fire's extension from the engine compartment near the bulkhead/dashboard on the mail side.

The bundled wiring harnesses on the driver's side connecting from the fuse panel towards the Engine Control Module (ECM) sustained no fire damage. The ECM had been positioned in the center of the dash and was observed with no fire damage.

The interior of the vehicle sustained only minor damage to the dash area just to the left of the steering column and right of the mail tray. The interior was compromised by the heat from the fire in the engine compartment. The damage to the interior of the vehicle was mostly from melting rubber and plastic which was caused by heat and minor flame impingement after the plastics melted creating an opening for the fire and heat to enter.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment was observed with moderate to severe fire damage. The driver's side contained the brakes master cylinder, battery, alternator, rubber and plastic components and the majority of the electrical conductors within the compartment. The ignition coil and fuel lines were also on this side. However, this side of the compartment sustained mostly minor fire damage. Most of the components were observed to be intact with very little melting.

No evidence was observed of the fire originating within the brakes, wheel hubs or tires in the area of the engine compartment.

The majority of damage to the engine compartment occurred on the upper portion of the engine in the area of the fuel injection system and air filter components. Fire patterns indicated this was the area of origin.

The spark plugs, plug wires and rubber boots were located a little further towards the front of the engine compartment and were intact. The fuel lines came up along the rear of the engine and turned to the driver's side of the engine compartment. The fuel lines were observed to be intact in this area. Fire patterns indicated the fire originated at the air filter where they extended into the engine compartment.

The battery for the vehicle was located at the front driver's side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be moderately damaged by fire however intact; no adverse electrical

activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range.

The engine compartment sustained the most damage and was where the fire originated. At the time of the inspection, the air filter was loose and not being held down by the appropriate components. The engine compartment had significant damage in the center rear and the right rear of the compartment. The fire spread from the center out toward the front and sides of the vehicle. The fuel lines and other components of the engine were severely damaged in the area of origin.

Undercarriage Inspection:

The undercarriage was mostly unremarkable. There were some melted pieces of plastic from drop down materials on the lower part of the engine. The rest of the undercarriage had areas of oil build-up from leaks or other mechanical issue in the past.

Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head. All four tires were intact.

Fuse Panel Inspection:

The fuse panel on the interior of the vehicle was intact and had damage from the fire or heat. No evidence of adverse electrical activity was noted. The respective wiring harness associated with the fuse panel was inspected and did not reveal any unexpected damages from the fire.

Area of Fire Origin:

The area of origin is the upper portion area of the engine at the fuel injection system and the air filter assembly components.

Potential Contributing Factors:

The contributing factors to this fire were that the air filter assembly appeared to be improperly installed which could allow fuel and fuel vapors to exit that area causing the

vapors to come into contact with a competent ignition source and ignite, thus burning and melting the surrounding areas of plastics and wiring.

Other possibilities considered included a fuel leak, however no evidence of a spray pattern, hot surface ignition or fuel leak was observed. A backfire was considered due to the previous service repair for a bad misfire, however no evidence of a misfire caused fire event was observed.

Evidence Collected:

There was no evidence collected during this investigation.

Service Records:

A review of the USPS service records revealed that the last service had been conducted on June 26, 2018, approximately 25 days prior to the fire. At that time, the fuel injectors and just prior to that the fuel pump and the air filter were replaced. After a review of the service records, it was determined that the maintenance on the vehicle within the last month prior to the fire may have contributed to the ignition sequence of the fire.

Interview:

Multiple attempts were made to contact the carrier for an interview. No return phone calls were received. The statement made by the carrier at the time of the fire was that the smell of smoke was observed coming from the engine compartment and that 911 was called.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

RIMKUS CONSULTING GROUP, INC.

Mathew C. Bolen

Mathew C. Bolen, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curricula Vitae

August 21, 2018
RCG File No. 50808417

Photograph 1

LLV 3312561, observe the heat damage to the center hood area.



Photograph 2

Rear cargo area of the vehicle, no fire damage.



August 21, 2018
RCG File No. 50808417

Photograph 3

Observe the damage to the hood area coming from the engine compartment.



Photograph 4

Mail side of the vehicle.



August 21, 2018
RCG File No. 50808417

Photograph 5

Interior of the vehicle, only damage was the progression from the engine compartment.



Photograph 6

Cargo area, no damage.



August 21, 2018
RCG File No. 50808417

Photograph 7

Engine compartment, observe the damage directly above the air filter.



Photograph 8

The air filter observed improperly installed with no fasteners.



August 21, 2018
RCG File No. 50808417

Photograph 9

The fuel injection system and air filter, observe the fire damage to the area.



Photograph 10

The fuel injection system, observe the fire damage to the area.



August 21, 2018
RCG File No. 50808417

Curricula Vitae



MATHEW C. BOLEN, CFI FIRE CONSULTANT

Mr. Bolen is a Certified Fire Investigator by the State of Georgia, a Certified Peace Officer with the State of Georgia, a Certified Fire Inspector with the State of Georgia, International Code Council, and the National Board on Fire Service Professional Qualifications, a nationally registered Paramedic, and a Fire Service Instructor, as well as a Public Fire Safety Educator with the National Board on Fire Service Professional Qualifications.

Mr. Bolen started his public safety career in 1991 with the City of Cartersville, overseeing the Community Service Program. In 1995, he transferred to the City of Cartersville Fire Department where he began his career in the fire service. In 1999, Mr. Bolen moved to the City of Marietta Fire Department, where in 2003, he began his career as a Fire Investigator and was responsible for cause and origin investigations, interviews, evidence collection, and photographic documentation, scene diagrams, and other aspects of fire investigations. Mr. Bolen has assisted or been lead investigator in over 150 investigations.

From 2005 to 2008, Mr. Bolen served as Firefighter Engineer with the Fire Department. He resumed as an Investigator with the Marietta Fire Department in 2008. Mr. Bolen was appointed as Lead Investigator of the Marietta Fire Department in 2015, where he remains today.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S. – Reinhardt University – Criminal Justice
A.A.S. – Fire Science – Chattahoochee Technical College
Georgia State Certified EMT – Certification Number – B1307269
Hazardous Material Technician
Georgia Certified Paramedic – Certification Number – 6841
Nationally Registered Paramedic – Certification Number – M0946157
State of Georgia Fire Inspector – Certification Number – 267787
State of Georgia Arson Investigator
State of Georgia Fire Instructor – Certification Number - 267786
Tactical Paramedic
Swift Water Rescue Instructor
National Professional Qualifications (NPQ) Evaluator
State of Georgia Emergency Manager
Georgia Fire Inspectors Association
Georgia Fire Investigators Association

LICENSES AND CERTIFICATIONS

National Board of Professional Qualifications – Certificate Number NFPA-1031-2003
National Board of Professional Qualifications – Certificate Number – NFPA-1041-2002
State of Georgia Post Certified Investigator – Certificate Number – PS0720160007S
National Registry EMT – License Number – B1307269
National Registry Paramedic – License Number – P0946157
International Code Council – Inspector 1 – Certificate Number – 8784114
State of Georgia Firefighter – Firefighter 1 – Certificate Number 20-1507oc-96



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road, Suite 224
Atlanta, GA 30339
(770) 436-9399 Telephone
(770) 438-2189 Facsimile

January 11, 2017

Re: RCG File No:

LLV Number: 50806457
VMF Location: 3312648
Subject: 3900 Crown Road in Atlanta, Georgia
Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine a 1993 LLV 3312648, VIN 1GBCS10A6P2920630. The vehicle was examined at the USPS Atlanta VMF located at 3900 Crown Road in Atlanta, Georgia. The fire incident reportedly occurred on November 29, 2016.

In the course of our work, we examined and documented the fire damaged vehicle on December 6, 2016. Our work to complete this assignment was performed by Fire Consultant, Mr. Gregory M. Cloer, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at and around the transmission and the exhaust system.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of leaking transmission fluid being ignited on the hot surface of the exhaust system.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side.

There were no visible fire patterns observed on the exterior of the vehicle.

Interior Inspection:

Examination of the interior of the vehicle revealed no visible fire patterns. The air filter housing from the engine compartment was observed on the floor next to the driver's seat. The transmission bell housing along with bolts was observed on the driver's side step.

Engine Compartment Inspection:

The engine compartment was examined. Smoke patterns were observed near the center of the bulkhead along the rear of the engine compartment. There was no visible fire or thermal damage observed in the engine compartment. The engine oil was observed within the operating range. The transmission fluid was checked and there was no transmission fluid observed on the dipstick.

Undercarriage Inspection:

Examination of the undercarriage revealed fire patterns extending from the transmission onto the crossover exhaust system and the undercarriage of the vehicle. The LLV was mounted on a GM frame. The fuel tank and fuel lines along the frame rail did not show any signs of failure. The fuel filter was a Champ model and was located along the left frame rail. The transmission was a non-baffled transmission.

Fuse Panel Inspection:

The fuse panel was located in the passenger compartment at the bulkhead on the driver's side of the vehicle. There were no open or "blown" fuses observed.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated at the transmission. The transmission fluid had leaked on the exhaust crossover system that was located directly below the transmission. The transmission fluid leaking occurred during normal vehicle operations and was ignited by the hot surface of the exhaust system.

Contributing Factors:

An undetermined adverse mechanical event allowed the transmission fluid to leak onto the exhaust crossover system.

Evidence Collected:

There was no evidence collected.

Interview:

Attempts were made to locate the carrier. An email was sent to the USPS Manager, on December 19, 2016. A return of the email indicated that it was undeliverable. I called the USPS Jonesboro Road location and spoke with Ms. She identified herself as a manager and also advised that Ms. was no longer at the Jonesboro Road location. I requested that she forward my contact information to Mr. As of this report, Mr. has not called for an interview.

Service Records:

A review of the service records for the involved LLV was conducted. There were no indications of any recent service work or repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

January 11, 2017
RCG File No. 50806457

Photograph 1

View of front exterior.



Photograph 2

View of driver side exterior.



January 11, 2017
RCG File No. 50806457

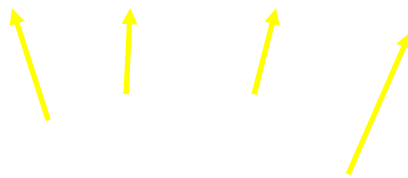
Photograph 3

View passenger and rear exterior sides.



Photograph 4

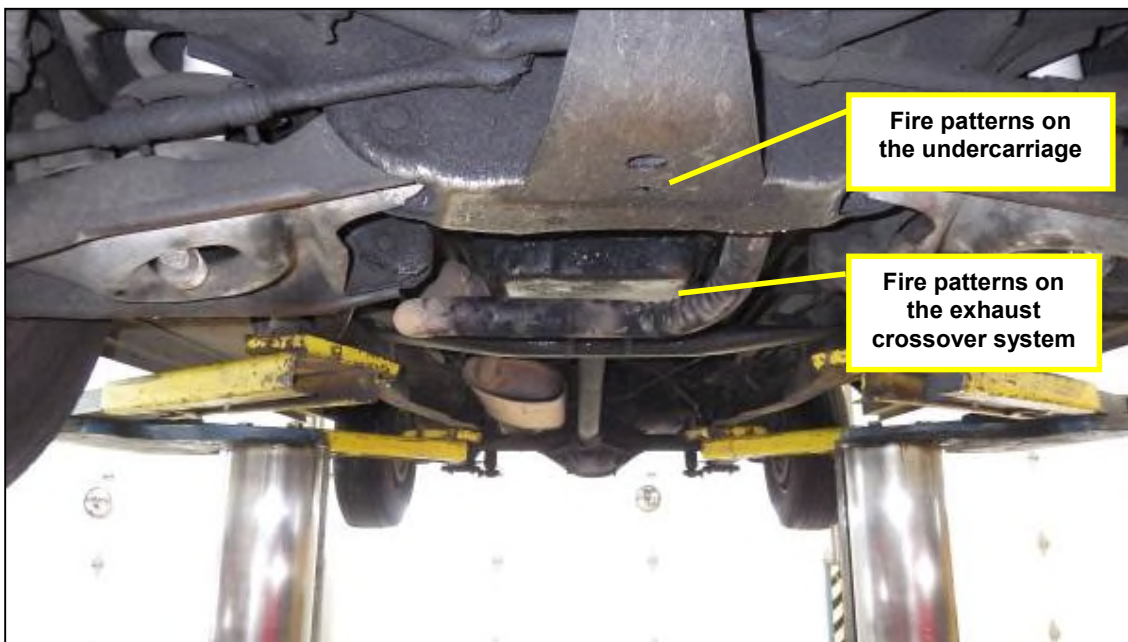
View of the smoke patterns on the bulkhead in the engine compartment.





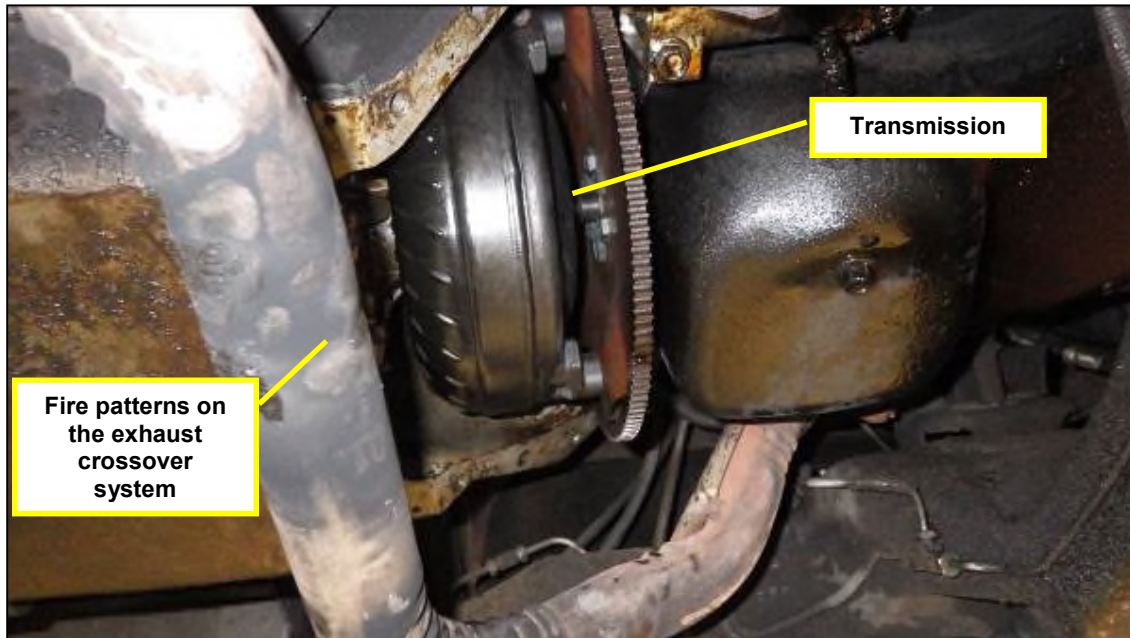
Photograph 5

View of the fire patterns on the undercarriage and exhaust crossover system.



Photograph 6

View of the transmission and fire patterns on the exhaust crossover system.



January 11, 2017
RCG File No. 50806457

CVs



**GREGORY M. CLOER, C.F.I.
FIRE CONSULTANT**

Mr. Cloer is a Certified Fire Investigator (C.F.I.) by Georgia P.O.S.T., NPQ, N.F.A. and IAAI for fire/arson investigation, and is certified by Georgia P.O.S.T. as a basic peace officer. Mr. Cloer has also served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting & prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator. Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. Mr. Cloer has testified as an expert in criminal court related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certification, P.O.S.T. Basic and Advanced Arson Investigation (Currently Fire Investigator I and II)
Certification, P.O.S.T. Basic Peace Officer
N.F.A. Fire/Arson Investigation
P.O.S.T. Arson Investigator
IAAI-CFI
NPQ Certified Fire Investigator
NPQ Fire Instructor

TRAINING/CERTIFICATES

Certified Fire Investigator • Fire Instructor • Peace Officer • EMT • Paramedic • Advanced Fire Investigator • Advanced Fire Cause & Origin Expert Witness

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1986 – 2015	Cobb County Fire and Emergency Services

DETAILED PROFESSIONAL EXPERIENCE:

RIMKUS CONSULTING GROUP, INC.

2015 - PRESENT

Fire Consultant

Conduct fire, arson, and explosive investigations including residential, commercial, and vehicular losses for clients. Collect and preserve evidence ensuring a precise chain of custody. Conduct interviews with victims, property owners, witnesses, investigators, and pertinent third party organizations. Photograph scenes and prepare detailed written investigative reports as to the conclusions and opinions of the subject loss. Testify in related depositions and trials.



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
921 Eastwind Drive, Suite 110
Westerville, Ohio 43081
Telephone: (866) 240-0401

August 16, 2019

Re: RCG File No: 100009335
LLV Number: 3313429
VMF Location: 1591 Dalton Street Cincinnati, Ohio
Subject: Preliminary/Final Report

Dear,

On July 22, 2019, a vehicle fire occurred in a US Postal Service LLV at 650 N. Miami Avenue in Cleves, Ohio. On July 24, 2019, Rimkus Consulting Group, Inc. was retained to examine 1994 LLV 3313429 with VIN 1GBCS1044R2905590. On July 30, 2019, we conducted our investigation at the USPS VMF located at 1591 Dalton Street in Cincinnati, Ohio.

Our work to complete this assignment was performed by W. Timothy Spradlin, IAAI-CFI (V). This report was reviewed by David R. Meyers, IAAI-CFI (V) Technical Fire Manager.

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the interior compartment in the area of the dashboard on the right (driver's) side of the vehicle.
2. The specific area of origin could not be conclusively identified due to the severe fire damage to the dashboard and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severe fire damage to the dashboard area and the lack of remaining physical evidence for examination; however, a failure event in one of the switches or relays in the dashboard area on the driver side could not be eliminated.

Observations

Exterior Inspection:

The front engine compartment section and driver compartment were severely damaged by fire. The cab roof and windshield were consumed and collapsed. The fenders were deformed by heat. The hood was consumed and collapsed. The front tires were flattened by heat exposure. The cargo compartment was intact. The rear overhead door was functional. Fire and smoke damage patterns indicated the exterior damage was a result of fire extension from the driver side interior area of the vehicle.

Interior Inspection:

The rear cargo compartment had smoke staining on all surfaces but, was otherwise intact. The driver compartment was severely damaged by fire. The components of the dashboard were consumed by fire. The steel frame of the driver's seat remained but all combustible covering was consumed by fire. The mail table was heat damaged and collapsed. The steering column was collapsed onto the fire debris from the dash and bulkhead wall of the engine compartment. Severe fire damage and mass loss was observed throughout the interior compartment.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment was observed with severe fire damage. Combustible components were consumed and collapsed. The battery casing was melted. All electrical wiring was severely damaged. Analysis of the fire patterns in the engine compartment indicated it was damaged by fire extension from the dashboard and bulkhead area near the driver side of the vehicle.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head. All four tires were intact.

Fuse Panel Inspection:

The fuse panel was consumed by the fire. The remains of copper wire circuits and connectors were excavated from the fire debris. No indications of arcing or electrical failure were observed.

Area of Fire Origin:

We excavated and examined the driver side dashboard and floor spaces. We recovered the fractured remains of toggle switches and relay housings. We examined the fire damaged wiring harness in the area. We did not observe any indications of specific electrical failure on the copper circuits. We could not eliminate a failure event in one of the switches or relays in the dashboard area on the driver side.

Potential Contributing Factors:

Based on the observed patterns of fire damage, the data collected and a systematic evaluation of the remaining physical evidence, the fire originated at the interior dashboard at the driver's side near the steering column. The exact cause of the fire could not be determined due to the catastrophic fire damage. The probability of an adverse electrical event that occurred in the wiring or switches could not be eliminated.

Evidence Collected:

No evidence was collected. The electrical wiring and switches in the area of fire origin was destroyed by the fire.

Interviews:

On July 30, 2019, we interview the VMF manager. He provided the past 12 months of maintenance records for LLV 3313429. The LLV was not a chronic problem. It was assigned to the Cleves post office where it had low mileage use for local carrier walking routes. There were no complaints from the carrier or the postmaster. The LLV had periodic maintenance on July 10, 2019. It had new turn signal and windshield wiper switches installed on February 13, 2019. It had new headlight and dimmer switches installed on December 26, 2018. All parts were from Wheelers Brothers supply. He opined that the failure had to be the horn, ignition, headlight, or flasher switch, as they were the only components with electrical power when the vehicle was shut off.

On July 30, 2019, we conducted a telephone interview with the Cleves postmaster. She stated the regular carrier driver of the LLV. She provided a phone number for Mr. . She stated he was an excellent employee with no history of problems.

On July 30, 2019, we conducted a telephone interview with the carrier driver Mr. He stated he normally drives the subject LLV. He said it was a good truck with no chronic problems. He had been out on his route for approximately 1 hour; he drove 15 minutes to his walking route. He parked the LLV and shut it off then locked the doors. He did not have any problems with the LLV during the drive. All systems were functioning, it was running good. He did not smell any odors. He did not leave any lights on while it was parked. He walked approximately 30 to 40 minutes on his route. When he returned to the LLV, he noticed light smoke from the door and the hood. The interior was very hazy with smoke. When he unlocked and opened the driver side door flames suddenly extended from the dash at the steering column. He attempted to move mail, but the flames spread quickly. He called 911 and then called the postmaster. He provided a photo he took of the fire.

Service Records:

Service records going back one year were obtained and reviewed. There was nothing documented that was done to the LLV that may have contributed to the dashboard area.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Spradlin

William T Spradlin, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

August 16, 2019
Rimkus File No. 100009335

Photograph 1

Photo provided by the carrier driver of the fire at the scene on the route.



Photograph 2

Remains of the fire damaged LLV at the VMF in Cincinnati.



August 16, 2019
Rimkus File No. 100009335

Photograph 3

Driver side with area of fire origin at dashboard.



Photograph 4

Rear of LLV.



August 16, 2019
Rimkus File No. 100009335

Photograph 5
Mail side of LLV.



Photograph 6
Undercarriage of LLV.



Photograph 7
Engine compartment of LLV.



Photograph 8
Battery in engine compartment.



Photograph 9
Driver compartment of LLV.



Photograph 10
Driver compartment of LLV, area of fire origin.



Photograph 11

Remains of the fuse panel in the driver compartment of LLV.



Photograph 12

Driver compartment of LLV, area of fire origin.



August 16, 2019
Rimkus File No. 100009335

Curriculum Vitae



William T. Spradlin, CFI(V), CFEI, CVFI

Fire Consultant
Fire Division

Background

Mr. Spradlin is an IAAI Certified Fire Investigator, a NAFI Certified Fire Explosion Investigator, and NAFI Certified Vehicle Fire Investigator. He is also certified in the State of Ohio as a Police Officer and Basic Police Academy Instructor.

He has over 35 years' experience in public safety, firefighting, law enforcement, and investigation. Mr. Spradlin also served in the U.S. Air Force, where he served four years active duty and 26 years in the Reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant/First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the U.S. Army in 2007 for combat meritorious service.

His fire/explosion investigation work spans over 26 years, and he has three related college degrees. His career includes work as a full-time firefighter, lieutenant, captain, deputy fire chief and fire chief. Mr. Spradlin also served as a deputy sheriff with the Greene County, Ohio Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He served for over 6 years full-time in fire arson investigation as Chief of the State of Ohio Fire Marshal's Fire-Explosion Investigation Bureau. He was also the curriculum manager/lead instructor for the Ohio Fire Academy Fire Investigation programs. He retired in 2014 after 32 years of public fire and law enforcement work to join Rimkus Consulting Group as a forensic fire and explosion investigator. Mr. Spradlin currently serves as a reserve Deputy Sheriff in Greene County, Ohio and as a volunteer fire training officer with the Xenia Township, Ohio Fire Dept. He also teaches at the Clark State Community College, the Sinclair Community College Criminal Justice Training Academy, and the Greene County Career Center Basic Police Academy. As a Certified Equine Specialist and owner/trainer of trail horses for over 20 years, Mr. Spradlin has also consulted on incidents involving horses.

Contact Information

(614) 948-0551

wspradlin@rimkus.com

921 Eastwind Drive,
Suite 110
Westerville, OH 43081



Rimkus Consulting Group, Inc.
921 Eastwind Drive, Suite 110
Westerville, Ohio 43081
Telephone: (866) 240-0401

October 8, 2019

Re: RCG File No: 100014391
LLV Number: 3314184
VMF Location: 850 Twin Rivers Drive Columbus, Ohio
Subject: Preliminary/Final Report

Dear

On September 16, 2019, a fire occurred in a US Postal Service vehicle involving LLV 3314184 at 1253 S. Watkins Road near Alexandria, Ohio. On September 17, 2019, Rimkus Consulting Group, Inc. was retained to examine LLV 3314184 with VIN 1GBCS1041R2900380. On September 19, 2019, we examined the fire damaged LLV at the VMF located at 850 Twin Rivers Drive in Columbus, Ohio.

Our work to complete this assignment was conducted by W. Timothy Spradlin, IAAI-CFI (V). This report was reviewed by technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The LLV was observed with severe fire damage and mass loss to all areas of the vehicle.
2. Burn patterns observed indicated the fire originated at or near the left rear section of the engine compartment and left side of the transmission.
3. Based on the data collected and the fire patterns observed we could not eliminate a mechanical failure of the transmission. We could not eliminate the probability

that a mechanical failure allowed transmission fluid to escape and contact the hot exhaust pipe. A hot surface ignition of the fluid would have ignited a fire that extended to the nearby rubber connectors of the gasoline supply lines. The addition of gasoline into the fire fuel load caused a very rapid spread of the fire throughout the entire vehicle.

Observations

Exterior Inspection:

The LLV was observed with severe fire damage and mass loss to all areas of the vehicle. The remains of the frame, with engine and wheels, were located on jack stands in the parking lot. The front bumper and a section of the grill were still attached to the frame. Shredded fire damaged tires were observed on the right side wheels. The rear bumper was still attached to the frame. The remaining fire damaged structural components were stacked on a pallet and in three large trash bins.

Interior Inspection:

The interior was observed with severe fire damage and mass loss to all areas. The steering wheel and column were still attached to the frame. A small section of the rear cargo floor was in-place. All other interior components were consumed or severely damaged by fire and located in the trash containers.

Engine Compartment Inspection:

The engine and transmission were attached to the frame. The hood and fenders were consumed by fire. The entire engine was severely fire damaged. The left side of the transmission bell housing was fire damaged and fractured, with the left side housing missing. There was no fluid in the transmission. The engine oil dipstick was not accessible. The fuel lines were severely damaged by fire at the rear of the engine block. There was heat damage and oxidation on the exhaust pipe adjacent to the left side of the transmission. The battery was destroyed by fire. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was a fuel injected throttle body design.

Undercarriage Inspection:

The GM frame under the vehicle was intact. The top side of the frame was fire damaged. The exhaust system was relatively intact.

Fuse Panel Inspection:

The fuse panel was consumed by the fire. The remains of copper circuits and connectors were hanging down on the fire damaged frame along the right front section

of the driver compartment. An examination of the fuse panel was not able to be completed due to the lack of remaining physical evidence.

Area of Fire Origin:

Burn patterns observed indicated the fire originated at or near the left rear section of the engine compartment and left side of the transmission.

Potential Contributing Factors:

Based on the data collected and the fire patterns observed we could not eliminate a mechanical failure of the transmission. We could not eliminate the probability that a mechanical failure allowed transmission fluid to escape and contact the hot exhaust pipe. A hot surface ignition of the fluid would have ignited a fire that extended to the nearby rubber connectors of the gasoline supply lines. The addition of gasoline into the fire fuel load caused a very rapid spread of the fire throughout the entire vehicle.

Evidence Collected:

No evidence was collected.

Interviews:

The carrier stated that while, "on route started to have transmission trouble. She called her supervisor who came out and added transmission fluid. Ten to fifteen minutes later the carrier noticed smoke coming from the left side of vehicle. She exited the vehicle and notice flames in the area of the engine compartment, she than called 911 and then her supervisor".

Service Records:

A review of the vehicle maintenance records for LLV 3314184, provided by the VMF in Columbus, Ohio, was performed, no recent work was noted in the area the fire originated.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Spradlin

William T. Spradlin, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

October 8, 2019
Rimkus File No. 100014391

Photograph 1
Front view.



Photograph 2
Driver side.



October 8, 2019
Rimkus File No. 100014391

Photograph 3
Rear view.



Photograph 4
Mail side.



October 8, 2019
Rimkus File No. 100014391

Photograph 5
Driver compartment.



Photograph 6
Engine compartment.



October 8, 2019
Rinkus File No. 100014391

Photograph 7
Rear mail compartment.



Photograph 8
Undercarriage.



October 8, 2019
Rimkus File No. 100014391

Photograph 9

Fire debris and parts collected from fire scene.



Photograph 10

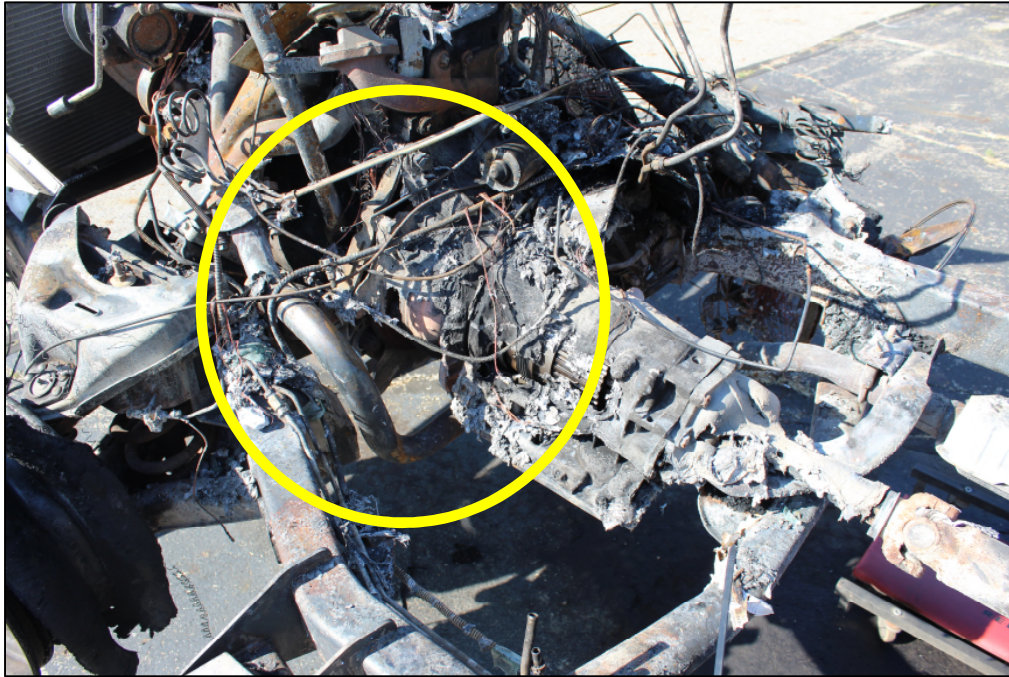
Fire damaged structural parts collected from fire scene.



October 8, 2019
Rimkus File No. 100014391

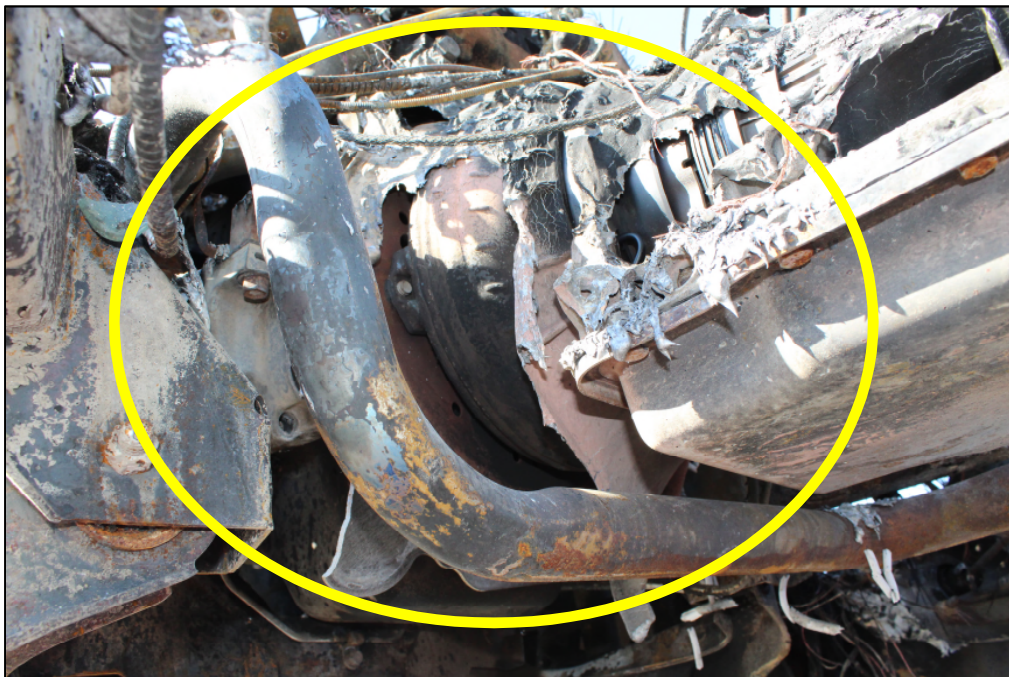
Photograph 11

Area of fire origin left rear section of engine compartment near transmission.



Photograph 12

Area of fire origin near left side of transmission and exhaust crossover pipe.



October 8, 2019
Rimkus File No. 100014391

Curriculum Vitae



William T. Spradlin, CFI(V), CFEI, CVFI

Fire Consultant
Fire Division

Background

Mr. Spradlin is an IAAI Certified Fire Investigator, a NAFI Certified Fire Explosion Investigator, and NAFI Certified Vehicle Fire Investigator. He is also certified in the State of Ohio as a Police Officer and Basic Police Academy Instructor.

He has over 35 years' experience in public safety, firefighting, law enforcement, and investigation. Mr. Spradlin also served in the U.S. Air Force, where he served four years active duty and 26 years in the Reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant/First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the U.S. Army in 2007 for combat meritorious service.

His fire/explosion investigation work spans over 26 years, and he has three related college degrees. His career includes work as a full-time firefighter, lieutenant, captain, deputy fire chief and fire chief. Mr. Spradlin also served as a deputy sheriff with the Greene County, Ohio Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He served for over 6 years full-time in fire arson investigation as Chief of the State of Ohio Fire Marshal's Fire-Explosion Investigation Bureau. He was also the curriculum manager/lead instructor for the Ohio Fire Academy Fire Investigation programs. He retired in 2014 after 32 years of public fire and law enforcement work to join Rimkus Consulting Group as a forensic fire and explosion investigator. Mr. Spradlin currently serves as a reserve Deputy Sheriff in Greene County, Ohio and as a volunteer fire training officer with the Xenia Township, Ohio Fire Dept. He also teaches at the Clark State Community College, the Sinclair Community College Criminal Justice Training Academy, and the Greene County Career Center Basic Police Academy. As a Certified Equine Specialist and owner/trainer of trail horses for over 20 years, Mr. Spradlin has also consulted on incidents involving horses.

Contact Information

(614) 948-0551

wspradlin@rimkus.com

921 Eastwind Drive,
Suite 110
Westerville, OH 43081



Rimkus Consulting Group, Inc.
3620 Horizon Drive, Suite 200
King of Prussia, PA 19406
(888) 623-1460 Telephone
(610) 941-1288 Facsimile

January 10, 2017

Re: RCG File No:

	47702297
LLV Number:	3314202
VMF Location:	3201 South 74 th Street in Philadelphia, Pennsylvania
Subject:	Preliminary/Final Report

Dear,

Rimkus Consulting Group, Inc. was requested to examine LLV 3314202, VIN 1GBCS1049R2900370. The vehicle was examined at the Philadelphia VMF located 3201 South 74th Street in Philadelphia, Pennsylvania. The fire incident reportedly occurred at 615 Woodlea Road in Bryn Mawr, Pennsylvania.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on December 6, 2016. Our work to complete this assignment was performed by Fire Consultant Jonathan Sivils, IAAI-CFI. This report and case was reviewed by Mr. Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at and around the positive conductor routed to the starter on the operator side of the engine compartment.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of damage to the positive conductor routed to the starter which came into direct contact with the metal frame and caused an adverse electrical event which ignited available combustible materials.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. Severe fire damage was observed to the front of the vehicle. The hood and roof along the front were consumed. All of the window glass in the vehicle was broken. The roof along the rear was intact. The front tires were burned while the rear tires remained intact.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred to the front dashboard area. The dashboard had melted and all of the electrical wiring and other components that were housed within the dashboard were severely damaged. The electrical wiring that could be examined did not display any physical evidence of adverse electrical activity. There was no physical evidence observed that would indicate that the fire originated in the operator compartment.

Engine Compartment Inspection:

The engine compartment was examined. Fire damage was observed throughout the engine compartment with the most severe damage in the compartment located along the rear of the engine closest to the firewall on the operator side. The plastic and rubber engine components were consumed. The air filter components were also consumed.

The fuel system was examined and found to be the original GM fuel filter system which was undamaged. The fuel lines were routed along the rear of the engine. The fuel filter was located along the frame of the vehicle on the left side. The filter was intact but all combustible fuel lines to the engine were consumed. The battery for the vehicle was located at the front right side of the engine compartment and had sustained severe fire damage. All battery cables remained intact with no signs of adverse electrical activity. The starter was examined and found to be intact on the left side of the engine. The electrical conductors for the starter revealed they were broken near the frame of the vehicle where the engine was mounted and showed signs of adverse electrical activity at the break.

Undercarriage Inspection:

Examination of the undercarriage revealed only distortion to the paint closer to the front, indicating heat traveled from the engine compartment area or front of vehicle. The involved LLV was mounted on a GM frame. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed it was consumed by fire.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage, witness statements, and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment along the left side near the starter. The specific ignition sequence and cause of the fire is an electrical event that occurred in the conductor for the starter that came in contact with the metal frame.

Contributing Factors:

A new starter was installed on this vehicle in September 2016.

Evidence Collected:

The vehicle starter and associated electrical wires were collected and shipped to the Charlotte office. These items will remain in evidence for 90 days in the event the components need to be examined.

Interviews:

On December 6, 2016, an interview was conducted with the driver of the vehicle. Mr. reported the following information:

- On the day of the fire at approximately 3:00 P.M., the vehicle started running rough.
- Mr. said the vehicle started making noise and within a few minutes, black smoke was coming from the engine into the vehicle.
- Mr. called 911 and within one minute, flames were coming from the passenger side of the engine compartment.
- No other issues or problems were reported with the vehicle on the day of the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. The starter for the LLV was replaced in September 2016 prior to the fire. There were no other repairs indicated that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jonathan K. Sivils

Jonathan K. Sivils, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

January 10, 2017
RCG File No. 47702297

Photograph 1
Front of vehicle.



Photograph 2
Right side of vehicle.



January 10, 2017
RCG File No. 47702297

Photograph 3
Rear of vehicle.



Photograph 4
Left side of vehicle.



January 10, 2017
RCG File No. 47702297

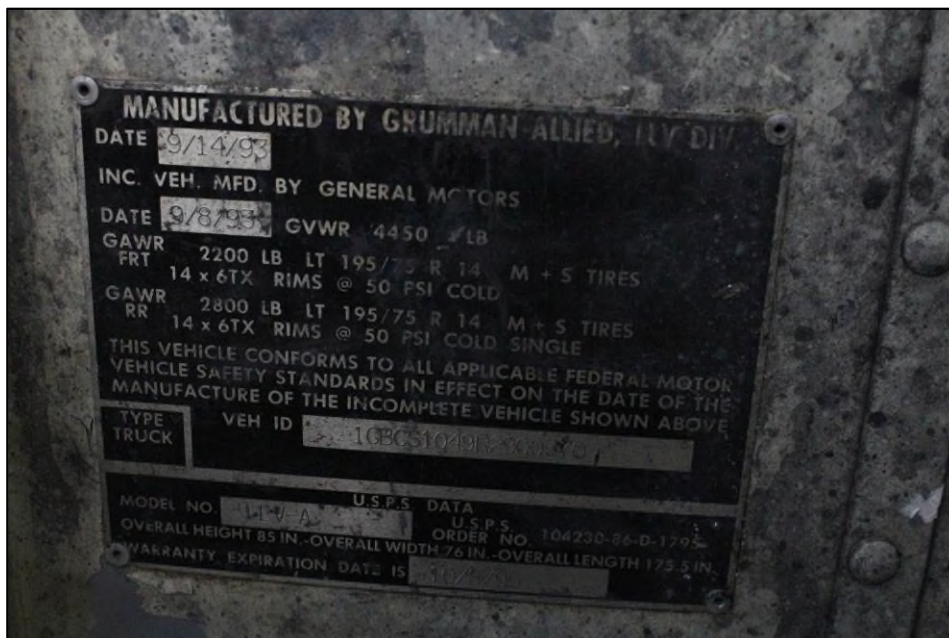
Photograph 5

Left front side of vehicle.



Photograph 6

Vehicle identification plate.



January 10, 2017
RCG File No. 47702297

Photograph 7

Fuel filter along frame in back left of vehicle.



Photograph 8

Overview of engine compartment.



January 10, 2017
RCG File No. 47702297

Photograph 9
Starter cable.



Photograph 10
Starter cable.



Photograph 10
Starter cable.



Photograph 10
Starter cable pinched and broken.



January 10, 2017
RCG File No. 47702297

Photograph 11
Starter.



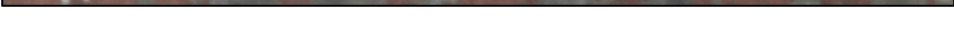
Photograph 12
Starter.



Starter and conductors removed as evidence.



Starter and conductors removed as evidence.



January 10, 2017
RCG File No. 47702297

CVs



Jonathan Sivils, IAAI-CFI, FIT, CFEI Fire Consultant

Mr. Sivils is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, as well as a Fire Investigation Technician (IAAI-FIT) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). He also holds an Associate of Science Degree in Fire Protection Technology. In a career spanning more than 25 years in the fire service, he has investigated and determined the origin and cause of more than 800 fires, to include commercial structures, residential structures, vehicles, marine and heavy equipment. He has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Sivils is a court-qualified expert witness in Criminal and Civil proceedings. Mr. Sivils has extensive training in fire and criminal investigations.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S Fire Protection Technology – Americus University, Washington D.C. – 2002
Bucks County Fire Chiefs and Firefighters Association
Bucks County Fire Marshal Association
International Association of Arson Investigators
National Association of Fire Investigators
National Fire Protection Association
Pennsylvania Association of Arson Investigators

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2012 – 2015	Donan Engineering Company, Inc.
2007 – 2012	Bucks county Fire Marshal Office, Bucks County, Pa
2005 – 2007	U.S. Department Of Defense Fire and Emergency Services
2009 – 2010	NEFCO Fire Investigations, Philadelphia, Pa
2003 – 2005	U.S. Department of Homeland Security
1998 – 2003	U.S. Department Of Defense Fire and Emergency Services
1993 – 2010	Penndel Fire Company, Penndel, Pa



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
7851 Woodland Center Boulevard
Tampa, FL 33614
(800) 498-3060 Telephone
(813) 289-5440 Facsimile
Certificate of Authorization No. 8301

October 27, 2016

Re: RCG File No: 41116294
LLV Number: 3314419
VMF Location: 31351 Avenue North in St. Petersburg, Florida
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 3314419, VIN 1GBCS1043R2900610. The vehicle was examined at the USPS St. Petersburg VMF located at 3135 1 Avenue North in St. Petersburg, Florida. The fire incident occurred on September 26, 2016.

In the course of our work, we examined and documented the fire damage vehicle and interviewed the VMF Manager and carrier on October 7, 2016. Our work to complete this assignment was performed by Fire Consultant William T. Schorn, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be on the driver's side of the engine compartment where the positive conductor from the battery to the starter was routed.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of mechanical damage to the positive conductor to the starter. This was caused by chaffing at the metal strap, which caused the conductor to come into direct contact with the metal strap causing arcing and a subsequent fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the rear of the vehicle and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The roof above the operator compartment had been consumed during the fire event. The driver's sliding door was intact and the mail side door sustained heat and smoke damage to the upper portions of the door frame during the fire progression. The cargo compartment roof was almost completely intact. The rear and mail side exterior walls suffered moderate smoke and heat damage. The driver side exterior wall also sustained moderate smoke and heat damage.

Interior Inspection:

While examining the interior of the vehicle, the operator's compartment revealed severe fire damage while the cargo compartment sustained moderate smoke and heat damage. An analysis of the fire patterns in this area indicated that the fire extended into this area from the engine compartment and did not originate on the interior.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. We observed severe fire damage to the engine compartment including all combustibles within the engine compartment. We were able to detect an acceptable level of oil on the dipstick. We also examined the transmission fluid level and detected an acceptable level of fluid on the dipstick. We were unable to examine the power steering fluid due to the severe fire damage in the engine compartment. The battery and fuse panel sustained severe fire damage.

While examining the battery cables, we observed arcing and separation to the positive cable leading from the battery to the starter. The plastic insulation on the battery cable

had been consumed by fire and while examining the upper bracket, we observed arc damage. The two brackets were used to secure the cable.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of fire damage along the bottom of the engine as well as the sides of the engine. The involved LLV was mounted on a GM frame. The fuel lines were examined and it appeared the lines had failed during the fire progression. The fuel tank was examined and the vehicle fuel filter system was equipped with a GM filter. Both were free of fire damage. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage. We were unable to determine the status of the fuses.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment. The specific area of origin was at and around the positive battery cable routed through the area of fire origin that sustained severe adverse electrical damage.

Contributing Factors:

The involved battery cable potentially sustained mechanical damage at the position where it contacts the bracket. This caused the insulation to become chaffed over time and caused the conductor to come in contact with the metal bracket causing an adverse electrical event.

Evidence Collected:

No evidence was collected from the vehicle.

Interviews:

On October 7, 2016, we interviewed the VMF Manager at St. Petersburg, Florida VMF. We learned the carrier was out of the vehicle when the fire was discovered. He said he had heard a number of accounts and didn't want to speculate what had occurred. He said the vehicle had no recent problems and only routine maintenance. He provided work orders for the vehicle and the last repair was for a minor accident in which the vehicle only required body work and no mechanical repairs.

While conversing with the letter carrier on October 7, 2016, via telephone, he said he is a "sub", but has been working five days a week. He said on the day of the fire, he left the post office at approximately 10:30 a.m. and began his route. He said he had operated the vehicle approximately 20 times and doesn't have a regular vehicle. He said he usually uses the vehicle approximately once every two weeks. He said the vehicle was usually operated by a different letter carrier. He said he had spoken to her and he was informed she had not been experiencing any problems with the vehicle.

At approximately 11:30 am, he exited the vehicle to make a delivery at Dairy-Mix Inc., located at 3020 46 Avenue North in St. Petersburg, Florida. He estimated he was only out of the vehicle approximately two minutes, when he was alerted to the fire. When he exited the vehicle, he said he had only left on the vehicle flashers. He said staff members of the business attempted to extinguish the fire with the use of four fire extinguishers, but they were unsuccessful. He said as he approached the vehicle, he observed black colored smoke coming from underneath the front of the hood and then observed flames originating underneath the dashboard.

When asked if he noticed anything unusual while operating the vehicle on the day of the fire, he said he thought he smelled something burning while driving, but thought it was the crematorium located on the block next to the Dairy-Mix. He said he didn't know what started the fire.

Service Records:

A review of the provided service records for the involved LLV indicated that a PM inspection was last completed on June 13, 2016. There was no other recent service that would have contributed to the fire loss.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Schorn

William T. Schorn, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

October 27, 2016
RCG File No. 41116294

Photograph 1

A view of the rear and mail sides of the vehicle.



Photograph 2

A view of the front and driver side of the vehicle.



Photograph 3

A view of the engine of the vehicle.



Photograph 4

Damage to the cable leading from the battery to the starter.



October 27, 2016
RCG File No. 41116294

Photograph 5

Visible damage to bracket holding cable.



October 27, 2016
RCG File No. 41116294

CVs



WILLIAM SCHORN, I.A.A.I., C.F.I., C.F.E.I., C.V.F.I. FIRE CONSULTANT

Mr. Schorn attended the University of South Florida majoring in Criminal Justice. Mr. Schorn's professional career includes over 30 years with the St. Petersburg Police Department. During his tenure with the police department, he was a Patrolman, Field Training Officer, Surveillance Detective, and Auto Theft Detective. For his last 19 years, he was assigned to the fire department to conduct fire investigations. In addition to the latent investigation, he also conducted the origin and cause investigations. Mr. Schorn was also the lead fire investigator for the City of St. Petersburg from 2006 until his retirement.

Mr. Schorn is a Certified Fire Investigator with the International Association of Arson Investigators, as well as a Certified Fire and Explosive Investigator and Certified Vehicle Fire Investigator with the National Association of Fire Investigators. He has been rendered an expert regarding fire investigations in criminal court. As the arson investigator assigned to the fire department, he assisted conducting the fire origin and cause investigation, as well as the criminal investigations. During the 19 years he was assigned to the fire department, he conducted approximately 1936 fire investigations. Since 2005, he has conducted approximately 493 origin and cause investigations, in which approximately 168 cases have been determined to be incendiary. Mr. Schorn also holds a private investigator license in the state of Florida (PI License number C1400618).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Law Enforcement Certification - Saint Petersburg Junior College (1984)
Criminal Justice – St. Pete College/University of South Florida (1980 -1984)
Professional Arson Co-Op of Florida
Florida Advisory Committee on Fire Prevention (FACAP)
International Association of Arson Investigators
International Association of Arson Investigators (FL Chapter)
National Association of Fire Investigators
Certified Fire and Explosive Investigator - National Association of Fire Investigators (2002)
Certified Fire Investigator - International Association of Arson Investigators (2009)
Certified Vehicle Fire Investigator (2013)

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1984 – 2015	Saint Petersburg Police Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
159 Crocker Park Boulevard Suite 400
Westlake, Ohio 44145
Telephone: (614) 948-0551

November 22, 2019

Re: RCG File No: 100017088
LLV Number: 3314535
VMF Location: 625 Wolf Ledges Parkway Akron, Ohio
Subject: Preliminary/Final Report

Dear ,

On September 27, 2019, a fire occurred involving USPS LLV 3314535 at 6347 Westshore Drive in Kent, Ohio. On October 17, 2019, Rimkus Consulting Group, Inc. was retained to examine the 1994 LLV 3314535 with VIN 1GBCS1044R2900129. On October 25, 2019, we examined the LLV at the Akron VMF located at 625 Wolf Ledges Parkway in Akron, Ohio.

Our work to complete this assignment was performed by W. Timothy Spradlin, IAAI-CFI (V). This report was reviewed by David R. Meyers, IAAI-CFI (V), Technical Fire Manager.

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The body, the interior, and the engine compartment of the vehicle were severely damaged by fire with a large amount of mass loss.
2. Based on the patterns observed and data gathered from the interview with the VMF manager, the area of fire origin was the left side of the interior under the dashboard.

3. The specific ignition sequence and cause of the fire was inconclusive due to severe fire damage and lack of remaining physical evidence. However, the carrier observed smoke omitting from under the left mail side of the dashboard. The carrier did not report any problems with the LLV prior to the fire starting.

Observations

Exterior Inspection:

The body of the vehicle was destroyed by fire. There was a small amount of the driver side body wall still intact and vertical. The driver door was in place in the open position, with fire damage and deformity. All tires were fire damaged, flattened, and partially consumed by fire. The doors were deformed and collapsed.

Interior Inspection:

The interior was destroyed by fire. The dashboard, mail table, cargo bulkhead and driver compartment were collapsed. The steering column was collapsed.

Engine Compartment Inspection:

The engine compartment was severely damaged. Fire patterns observed in the engine compartment indicated the area of fire origin was the dashboard area. According to the VMF manager, the engine was a 2.2 liter with fuel injection and high output coil.

Undercarriage Inspection:

The undercarriage could not be examined. The vehicle was sitting on the floor on the wheels with all tires destroyed, shredded, and flattened. The VMF staff stated it was not safe to put on the vehicle hoist rack. According to the VMF manager, the frame was an AM General type.

Fuse Panel Inspection:

The fuse panel was destroyed and collapsed into the body debris.

Area of Fire Origin:

Based on the patterns observed and data gathered from the interview with the VMF manager, the area of fire origin was the left side of the interior under the dashboard.

Potential Contributing Factors:

The LLV was a loaner from the VMF that was sent out to replace LLVs in the district that were in the shop for repairs or maintenance. It had been at the Kent post office for approximately two weeks.

Evidence Collected:

None collected.

Interview:

On October 25, 2019, we left a message for the postmaster, Mr. to call us for an interview. He was on extended leave and did not respond to our message. On October 25, 2019, we left a message for the carrier, Ms. to call us for an interview. She did not respond to our request.

The VMF Manager stated the carrier driver told him she was on her route, driving, when smoke and flames originated from under the left mail side of the dashboard. The carrier exited and called 911. The carrier did not report any problems with the LLV prior to the fire starting.

Service Records:

On October 25, 2019, we conducted an interview with VMF manager. He provided the last 12 months maintenance records. He stated the last preventative maintenance was July 29, 2019.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Spradlin

William T. Spradlin, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

November 22, 2019
Rimkus File No. 100017088

Photograph 1

Carrier photo of the fire scene.



Photograph 2

Front exterior.



November 22, 2019
Rimkus File No. 100017088

Photograph 3
Driver side.



Photograph 4
Rear of vehicle.



November 22, 2019
Rimkus File No. 100017088

Photograph 5
Mail side.



Photograph 6
Engine compartment.



November 22, 2019
Rimkus File No. 100017088

Photograph 7
Cargo area.



Photograph 8
Driver compartment.



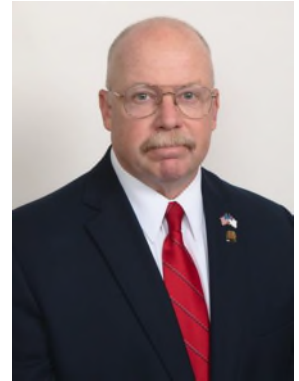
November 22, 2019
Rimkus File No. 100017088

Photograph 9
Mail table in interior.



November 22, 2019
Rimkus File No. 100017088

Curriculum Vitae



William T. Spradlin, CFI(V), CFEI, CVFI

Fire Consultant
Fire Division

Background

Mr. Spradlin is an IAAI Certified Fire Investigator, a NAFI Certified Fire Explosion Investigator, and NAFI Certified Vehicle Fire Investigator. He is also certified in the State of Ohio as a Police Officer and Basic Police Academy Instructor.

He has over 35 years' experience in public safety, firefighting, law enforcement, and investigation. Mr. Spradlin also served in the U.S. Air Force, where he served four years active duty and 26 years in the Reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant/First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the U.S. Army in 2007 for combat meritorious service.

His fire/explosion investigation work spans over 26 years, and he has three related college degrees. His career includes work as a full-time firefighter, lieutenant, captain, deputy fire chief and fire chief. Mr. Spradlin also served as a deputy sheriff with the Greene County, Ohio Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He served for over 6 years full-time in fire arson investigation as Chief of the State of Ohio Fire Marshal's Fire-Explosion Investigation Bureau. He was also the curriculum manager/lead instructor for the Ohio Fire Academy Fire Investigation programs. He retired in 2014 after 32 years of public fire and law enforcement work to join Rimkus Consulting Group as a forensic fire and explosion investigator. Mr. Spradlin currently serves as a reserve Deputy Sheriff in Greene County, Ohio and as a volunteer fire training officer with the Xenia Township, Ohio Fire Dept. He also teaches at the Clark State Community College, the Sinclair Community College Criminal Justice Training Academy, and the Greene County Career Center Basic Police Academy. As a Certified Equine Specialist and owner/trainer of trail horses for over 20 years, Mr. Spradlin has also consulted on incidents involving horses.

Contact Information

(614) 948-0551

wspradlin@rimkus.com

921 Eastwind Drive,
Suite 110
Westerville, OH 43081



Rimkus Consulting Group, Inc.
5707 South Laburnum Avenue
Richmond, Virginia 23231
757-229-2226 Telephone
(888) 286-9943 Facsimile

January 17, 2018

Re: RCG File No: 47603146
LLV Number: 3314846
VMF Location: 22363 Randolph Drive Sterling, Virginia
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 3314846, which reportedly occurred at Signal Hill Road and Liberia Avenue in Manassas, Virginia on December 7, 2017, at 4:20 P.M. In the course of the work, we examined and documented the fire-damaged vehicle, and interviewed the carrier/operator on December 18, 2017.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 22363 Randolph Drive in Sterling, Virginia on December 18, 2017. The work to complete this assignment was performed by Fire Consultant William R. Clark, IAAI-CFI (V). A technical review of this report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach, as recommended in the current edition of National Fire Protection Association's NFPA-921, "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated within the engine compartment of the involved LLV.

2. The specific area of origin was at and around a battery cable routed directly below the power steering pump assembly that sustained an adverse electrical event.
3. The specific ignition sequence and cause of the fire was determined to be an adverse electrical event at the large diameter battery cable that was identified routed through a retaining clamp below the power steering pump. The cable exhibited physical evidence consistent with adverse electrical activity and the cable was severed at the retaining clamp. The retaining clamp exhibited physical evidence consistent with adverse electrical activity and arcing. The source of the fire's ignition was resistance heating of the battery cable caused by a direct short between the cable and the retaining ring.
4. Wear and degradation of components allowed an unfused adverse electrical event to develop at the battery hot lead where it was in direct contact with the retaining clamp below the power steering pump within the engine compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size and manufacturer which were Goodyear LT 195/75 R15. There was no evidence to indicate that the brakes, wheel assemblies, or axles had failed. The fuel cap was in place and secured. The engine and passenger compartments of the vehicle sustained significant fire damage. The cargo area only displayed minor fire damage.

Interior Inspection:

The interior examination of the vehicle revealed that the dashboard had sustained severe damage. The fire originated in the engine compartment and entered the operators' area through the bulkhead and windshield, causing severe damage to this area. The cargo area displayed moderate fire damage. The ECM had displayed severe fire damage.

Engine Compartment Inspection:

Fire pattern analysis and an examination of the remaining physical evidence within the engine compartment, revealed that the fire originated on the left side of the engine. The battery which is in the right side of the compartment sustained moderate fire damage. The radiator sustained moderate damage. Located in the center of the engine was the battery cable which extended from the battery to the starter. The cable displayed evidence of adverse electrical activity. The engine was a 2.2 liter, fuel injected, with a direct ignition system.

Fire damage and mass loss of materials was observed to the power steering fluid reservoir, and most of the polymer reservoir had been consumed. Fire progression patterns were consistent with a fire originating below the power steering pump and progressed upward and outward from this location. A large diameter battery cable was identified routed through a retaining clamp below the power steering pump. The cable exhibited physical evidence consistent with adverse electrical activity and the cable was severed at the retaining clamp. The retaining clamp exhibited physical evidence consistent with adverse electrical activity and arcing. The two ends of the severed cable were examined and both exhibited physical evidence of adverse electrical activity.

The fuel line was intact from the fuel filter positioned at the bulkhead. Burn patterns observed in the engine compartment confirmed the fire originated in the front left area of the engine compartment and progressed upward and outward throughout the engine compartment.

Undercarriage Inspection:

Examination of the undercarriage revealed significant oxidation to the framing, mainly near the engine compartment. The fuel lines were examined and it appeared the lines had not failed during the fire progression. The fuel tank was examined and the vehicle fuel filter system was equipped with a GM filter. Both were free of fire damage. The exhaust system was intact and the transmission did not reveal any leaks. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel inside the cab was not located due to the severe fire damage.

Area of Fire Origin:

Based on the observed patterns of fire damage and a systematic evaluation of the remaining physical evidence, the fire originated at the retaining ring below the power steering pump. The first fuel ignited was combustible insulation materials on the battery cable. The source of the fire's ignition was resistance heating of the battery cable caused by a direct short between the cable and the retaining ring.

Contributing Factors:

The specific ignition sequence and caused of the fire was determined to be the direct result of an electrical conductor being either compressed or chaffed, causing the adverse activity of the electrical conductor. This action resulted in arcing, which ignited the protective rubber coating on the conductor, and then spread to the other combustible materials located nearby.

Wear and degradation of components allowed an unfused adverse electrical event to develop at the battery hot lead where it was in direct contact with the retaining clamp below the power steering pump within the engine compartment.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interview:

The operator of the vehicle was interviewed. He stated that he left the mail facility at 9:30 A.M. on the day of the fire, fueled the vehicle, and performed the vehicle check off list. There were no problems that morning with the vehicle. He came back to the mail facility for his second trip. During that trip, he observed black smoke coming from the engine compartment, but he did not know where the fire was coming from. He tried to stop, but the vehicle would not stop. He pulled the emergency brake, which did not stop the vehicle. He then swerved onto the curb to prevent from hitting a stopped car.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire

originated. Based on this information, wear and degradation of components on the vehicle may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William R. Clark

William R. Clark, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

January 17, 2018
RCG File No. 47603146

Photograph 1

View of the front of the vehicle.



Photograph 2

View of the right side of the vehicle,



January 17, 2018
RCG File No. 47603146

Photograph 3

View of the rear of the vehicle.



Photograph 4

View of the right side of the vehicle.



January 17, 2018
RCG File No. 47603146

Photograph 5

View of the engine compartment.



Photograph 6

View of the engine.



January 17, 2018
RCG File No. 47603146

Photograph 7

View of the battery located on the right side of the engine.



Photograph 8

View of the dash area.



January 17, 2018
RCG File No. 47603146

Photograph 9

View of the dash area.



Photograph 10

View of the undercarriage.



Photograph 11

View of the electrical cable involved – the cable extends from the battery to the starter.



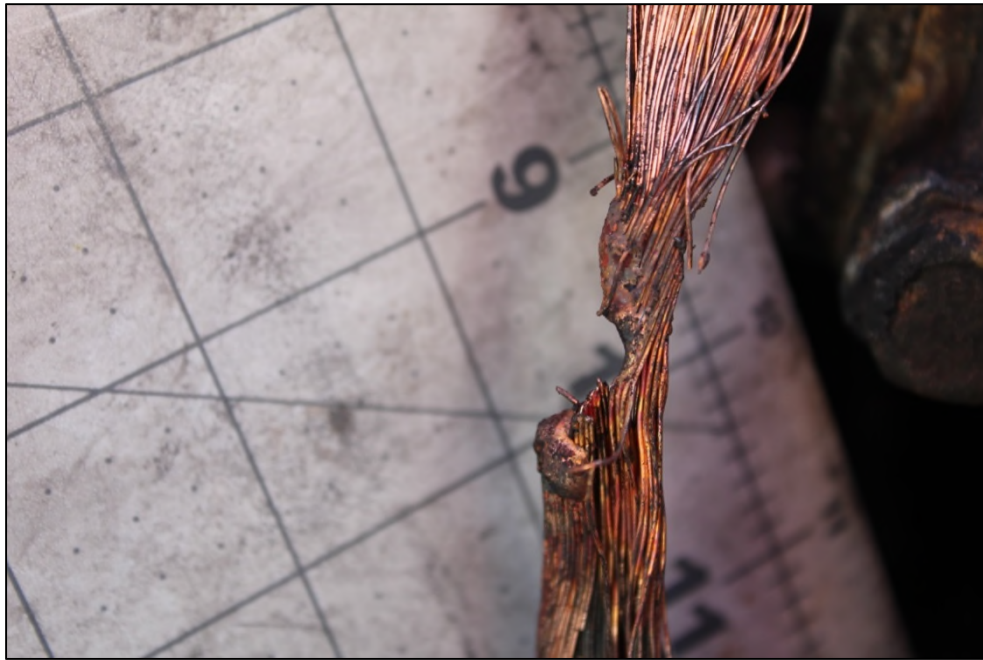
Photograph 12

Close-up view of the damage to the cable.



Photograph 13

Close-up of damage to the cable.



Photograph 14

Close-up of damage to the cable.



January 17, 2018
RCG File No. 47603146

CVs



**William “Bill” Clark, IAAI-CFI, CFEI, CVFI
Fire Consultant**

Mr. Clark is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (VACFI) with the Virginia Department of Fire Programs. Mr. Clark is a Registered Private Investigator with the Virginia Department of Criminal Justice Services.

Mr. Clark has conducted over 900 fire/explosions investigations as a law enforcement officer and private fire investigator. These fire/explosion investigations have involved commercial & residential structures, as well as heavy equipment and vehicles. Mr. Clark has extensive experience investigating fires involving injury and death. Mr. Clark has also conducted investigations involving hazardous materials. Mr. Clark has instructed firefighters, police, and military in fire investigation procedures, death investigations, evidence collection, homemade explosives, and post blast investigations, weapons of mass destruction & clandestine lab recognition and safety.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Tidewater Community College, Virginia Beach, VA
Associates in Fire Science, 12 Credit Hours

Virginia Department of Fire Programs
Firefighter 1, 2, & 3, 1987

Virginia Department of Criminal Justice Academy, Petersburg, VA
Police Academy, 1989

National Fire Academy, Emmetsburg, MD
Fire/Arson Investigation Course, 1996

Virginia Department of Forensic Sciences, Lynchburg, VA
Death Investigation, 2000

Greater Cincinnati Regional Arson and Fire Investigation Association
Fire Investigation, 2003

North Carolina/South Carolina International Association of Arson Investigators Fire Investigation Seminar, 2015

Virginia State Police, Richmond, VA
Vehicle Theft Investigation, 2003

Virginia Chapter of the International Association of Arson Investigators
Electrical Fire Investigation, 2000
Fire Investigation, 2001
Small Appliance Fire Investigation 2001
Fire Investigation, 2003
Fatal Fire Investigation, 2004
Fire Investigation, 2008
Meeting the 1033/921 Challenge, 2013

William “Bill” Clark, IAAI-CFI, CFEI, CVFI

Bureau of Alcohol, Tobacco, Firearms, & Explosives, Richmond, VA
Post Blast Investigation, 2004

Virginia Department of Fire Programs, Norfolk, VA
Environmental Crimes Investigations, 2005
Arson Scene Evidence Processing, 2009

Central Shenandoah Criminal Justice Training Academy, Weyers Cave, VA
Crime Scene Investigations Course, 2005

Central Virginia Criminal Justice Academy, Lynchburg, VA
Reid Interviewing Techniques, 2006
Reid Interview Advanced Techniques, 2007

Public Agency Training Council
Vehicle Fire Investigation Course, 2006
Arson Evidence Collection Course, 2007
Arson for Profit Course, 2009

Federal Emergency Management Agency, Anniston, AL
Hazardous Materials Technician, 2008

Zero Point, Virginia Beach, VA
Advanced Homemade Explosives, 2012

Safety Unlimited
HAZWOPER Training & Certification, 2014

Member of: National Association of Fire Investigators
 International Association of Bomb Technicians & Investigators
 International Association of Arson Investigators
 Virginia Chapter – International Association of Arson Investigators

EMPLOYMENT HISTORY

2014 to Present	Rimkus Consulting Group, Inc.
2006 to 2014	Fire Technology Consultants, LLC (Part Time)
2009 to 2012	Joint Improvised Explosive Device Defeat Organization (MPRI Contractor)
2004 to 2009	Albemarle County Fire Marshal's Office
2003	Donan Engineering Company
2001 to 2006	Danielson Investigative Services (Part Time)
2001 to 2006	Fire Analysis Consulting Group (Part Time)
1998 to 2003	Amherst County Sheriff's Office
1989 to 1998	City of Franklin Police Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
5804 West 74th Street
Indianapolis, Indiana 46278
Telephone: (800) 971-6587

July 2, 2019

Re: RCG File No: 100004618
LLV Number: 3314849
VMF Location: 1499 Martin Luther King Drive Gary, Indiana
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 3314849, VIN 1GBCS1044R2901023. The vehicle was examined at the USPS Gary Vehicle Maintenance Facility located at 1499 Martin Luther King Drive in Gary, Indiana. The fire incident reportedly occurred in the parking lot at 1499 Martin Luther King Drive in Gary, Indiana on May 24, 2019.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on June 7, 2019. Our work to complete this assignment was performed by Fire Consultant David A. Mager, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated within the engine compartment of the involved LLV.
2. The specific area of origin was at and around a battery cable that sustained an adverse electrical event.

3. The specific ignition sequence and cause of the fire was determined to be an adverse electrical event at the large diameter battery cable that was identified to be routed through a retaining clamp. The cable exhibited physical evidence consistent with adverse electrical activity. The source of the fire's ignition was resistance heating of the battery cable.
4. Wear and degradation of components may have allowed an unfused adverse electrical event to develop at the battery cable within the engine compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. There were burn patterns on the driver's side front fender. There was no other visible fire damage to the exterior of the vehicle. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. There was no evidence to indicate that the vehicle was involved in a recent collision.

Interior Inspection:

There was no visible fire damage to the interior of the vehicle.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L, fuel injected with four fuel injectors. The vehicle had a standard ignition coil. The remains of the battery were located at the right front side of the engine compartment. The battery was significantly damaged by fire. We examined the conductors from the battery and observed no visible electrical activity. Burn patterns indicated the fire originated at the battery. We examined the starter and observed it to be intact with no adverse electrical activity. The starter was eliminated. We examined the alternator and observed it to be intact with no adverse electrical activity.

Fire damage in the engine compartment was focused at the battery and right fender. We observed significant fire damage to the battery particularly at the area of the negative post. We observed the insulation of the positive and negative battery cables had been consumed by fire approximately 10 inches from the battery.

Undercarriage Inspection:

Examination of the undercarriage revealed no visible fire damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure up to where they entered the frame rail. The exhaust system was intact.

Fuse Panel Inspection:

The fuse panel was intact and undamaged by fire.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the engine compartment at the battery on the right side of the vehicle.

Potential Contributing Factors:

A high resistance connection at the battery terminal connection heated and caused the ignition of the plastic enclosure of the battery.

Evidence Collected:

No evidence was collected.

Interview:

In an interview the carrier Ms. provided the following information:

- She had started her route about 10:00 a.m.
- She had done a pre-check of her LLV prior to the start of her route.
- All components were in working order.
- She observed no problems throughout the day.
- She smelled a burning smell a few blocks away from the station when returning for the day.
- She thought the smell was from outside in the neighborhood.
- She parked the vehicle in the station lot then observed flames coming from the right front wheel well.

- She went inside and notified supervisor who used a fire extinguisher to put the fire out.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records, it was determined there was no maintenance within the last year to the battery. We did observe a date written in white marker on the battery of "7/3/17". The battery was identified as an Interstate Mega-Tron Plus.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Mager

David A. Mager, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1

Overall view of LLV 3314849.



Photograph 2

Burn patterns to right front fender.



Photograph 3

Area of origin at battery.



Photograph 4

Fire damage at negative side of battery.



Curriculum Vitae



David A. Mager, C.F.I. (V)

Fire Consultant
Fire Division

Background

Mr. Mager is an International Association of Arson Investigators Certified Fire Investigator, Illinois State Fire Marshall Office Certified Fire Investigator, Certified Fire Officer II, Hazardous Materials Technician "B" and was an Illinois Dept. of Public Health Certified Paramedic. He is also a Certified Private Investigator in Illinois, Indiana, Michigan, Ohio, Minnesota, Iowa, Missouri and Wisconsin.

Mr. Mager was a Deputy Chief and had been the Training Officer with the Midlothian Fire Department in Illinois. He was an Assistant Team Leader for the Southwest Hazardous Materials Response Team and routinely responded to fire and hazardous materials incidents, investigated fires and conducted life safety inspections within the municipality.

He has an extensive professional background in the areas of firefighting and fire investigations and has investigated over 1000 fires. His professional experience includes fire and explosion investigations, fire protection and detection system inspections as well as hazardous materials mitigations.

As an International Association of Arson Investigators Certified Instructor and a Certified Instructor II through the Illinois State Fire Marshall Office, Mr. Mager has conducted numerous live fire training exercises for firefighters and fire investigators using authentic room furnishings as well as classes on fire behavior and evidence preservation.

As a forensic investigator, he performs scene investigation and analysis of fire and explosion incidents including origin and cause determination, analysis of products and circumstances surrounding the initiation of the fire.

Contact Information

(630) 321-1846
damager@rimkus.com
7501 S. Quincy Street,
Suite 160
Willowbrook, IL 60527



Rimkus Consulting Group, Inc.
106 Oxmoor Road, Suite 148
Birmingham, Alabama 35209
UNITED STATES

Certificate of Authorization No. CA3120

October 7, 2019

Re: RCG File No: 100013381
LLV Number: 3315076
VMF Location: 100 Congress Street Mobile, Alabama
Subject: Preliminary/Final Report

Dear,

On August 24, 2019, a fire involving US Postal Service vehicle LLV 3315076 reportedly occurred at 82 Murdock Drive in Monroeville, Alabama. The vehicle was manufactured by General Motors in 1993 and was a Grumman model LLV-A with VIN 1GBCS1048R2901251.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Mobile VMF located at 100 Congress Street in Mobile, Alabama. In the course of our work, we inspected and photographed the vehicle, reviewed repair and maintenance orders, and interviewed the carrier Mr. Anthony Harris. Our work to complete this assignment was conducted by Hubert T. Peete, IAAI-CFI, Fire Consultant. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. Based upon the observed patterns of fire damage and a systematic evaluation of the remaining evidence, the fire originated at the lower left side of the engine compartment.

2. The specific ignition sequence and cause of the fire was the ignition of atomized fuel that was introduced into the engine compartment due to a failure of the fuel system components which contacted the hot surfaces in the engine compartment.
3. The introduction of the fuel into the compartment was probably the result of a leak along the flexible rubber section of the fuel line.
4. The most competent heat source along the left side was the exhaust system components.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The front grill and lights of the LLV were observed to be intact with no fire damage. The rear and side panels of the storage area were unburned and exhibited smoke staining across the surfaces. All of the window glass around the cab had failed due to thermal heating. The majority of the aluminum roof, left quarter panel, hood, and the A pillars were severely fire damaged and had melted during the incident. The left front tire was extensively fire damaged and had separated from the wheel. The exterior fire movement and intensity patterns were consistent with a fire at the left side of the engine compartment.

Interior Inspection:

The interior was severely fire damaged throughout and a majority of the combustible components had been completely consumed by the fire. Mass loss was observed along the entire dash and the metal components had collapsed into the floorboard. Most of the electrical circuits were intact; however, the insulation had been completely consumed along the conductors.

Engine Compartment Inspection:

The LLV was powered by a 2.2 liter L4 engine. The entire compartment was badly fire damaged with the most extensive damage along the left side. The inspection of the battery, alternator, starter, and their associated wiring did not reveal any evidence of a failure at the components or abnormal electrical activity along any of the conductors. Other than moderate heat and flame exposure, the metal engine block and exhaust system components were intact and relatively undamaged. The aluminum components of the fuel system along the top of the engine had begun to melt when the fire was extinguished. The fire movement and intensity patterns were consistent with a fire at the left side.

Undercarriage Inspection:

The inspection of the undercarriage revealed moderate oxidation to the metal components at and adjacent to the origin area. The GM chassis and drivetrain were intact and did not exhibit mechanical damage. The combustive section of the two transmission cooling lines along the left side had been consumed by the fire.

Fuse Panel Inspection:

The fuse panel was severely burned and the exterior plastic housing was consumed during the fire. Many of the conductors had disconnected due to the mass loss of the housing. A majority of the copper connectors and conductors were still intact and were found within the debris along the floorboard.

Area of Fire Origin:

The left side of the engine compartment was extensively fire damaged throughout and a majority of the combustible components had been consumed by the fire. The heat sources within the area of origin included the brake and wheel components of the left front wheel, the engine exhaust components, and the starter and its associated wiring. The potential ignitable liquid fuel sources included the gasoline from the fuel lines and transmission fluid from the cooling lines.

The inspection of the heat producing components did not reveal any evidence of a failure or malfunction at any of the items. The combustible and flexible portions of the fuel and transmission lines were consumed by the fire and could not be inspected.

Potential Contributing Factors:

Based upon the observed patterns of fire damage and a systematic evaluation of the remaining evidence, the fire originated at the lower left side of the engine compartment. The specific ignition sequence and cause of the fire was the ignition of atomized fuel that was introduced into the engine compartment due to a failure of the fuel system components which contacted the hot surfaces in the engine compartment. The introduction of the fuel into the compartment was probably the result of a leak along the flexible combustible rubber section of the fuel line. The most competent heat source along the left side was the exhaust system components. While the combustible sections of the transmission cooling lines also created a potential fuel source, due to the statements by Mr. Harris that the engine began to run sluggishly, he had smelled gasoline all day, and the fact that the transmission was operating normally suggest that the fuel source was most likely from the fuel system and not the transmission.

Contributing factors to a failure at the rubber fuel lines can be attributed to normal wear due to age, loosened or damaged connectors, or mechanical damage to the line.

Evidence Collected:

No evidence was collected during the inspection.

Interviews:

Mr. reported the following:

- An odor of gasoline had been noticed most of the day.
- He first noticed smoke under the dash and steering column.
- The vehicle's engine became sluggish with a loss of power before the fire occurred.
- The transmission was operating normally and shifted gears properly.

Service Records:

Service records going back one year were obtained and reviewed. The review of the maintenance records revealed extensive work to the vehicle over the last two years. However, none of the work involved the components of the fuel system.

There was nothing documented that was done to the LLV that may have contributed to the fuel system failure.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Hubert T. Peete

Hubert T. Peete, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

October 7, 2019
Rimkus File No. 100013381

Photograph 1
View of the front.



Photograph 2
View of the right side.



October 7, 2019
Rinkus File No. 100013381

Photograph 3
View of the rear.



Photograph 4
View of left side.



October 7, 2019
Rinkus File No. 100013381

Photograph 5

View of the storage area.



Photograph 6

View of the dash and operator's position.



October 7, 2019
Rimkus File No. 100013381

Photograph 7

View of the remains of the fuse panel at the right side of the dash.



Photograph 8

View of the engine compartment.



Photograph 9

View of the left side of the engine compartment with the origin area notated.



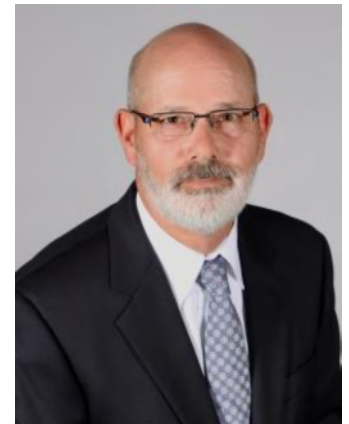
Photograph 10

View of the rigid fuel line as it enters the engine compartment along the frame rail.



October 7, 2019
Rimkus File No. 100013381

Curriculum Vitae



Hubert T. Peete, CFI, CFEI, CVFI

Fire Consultant
Fire Division

Background

Mr. Peete began his fire service career at the age of 16 in 1983, as an Explorer Scout with his hometown fire department.

He developed an interest in the origin and cause of fires early in his career and has pursued to increase his knowledge of the subject throughout most of his life. He continued as a volunteer firefighter and officer with his home town for 20years. He earned a B.S. in Public Safety Administration and holds a number of fire-related certifications including Certified Fire Investigator, Certified Vehicle Fire Investigator, Certified Fire and Explosion Investigator and Certified Hazardous Materials Technician.

After attending college, he entered service with the City of Pelham Fire Department in Pelham, AL. He served in many capacities and retired as a company officer in December 2015, after 25-years of service.

Mr. Peete has spent the last 15-years working as a private fire consultant and has investigated over 1,000 fires. He has been certified and testified as an expert witness in both federal and circuit courts.

Professional Engagements

- Fire/Explosion
 - Spree Arson Event, Multiple Commercial Building Fires - Montevallo, AL (March,1998), successfully led task force that included State Fire Marshal's office for the apprehension and conviction of a serial arsonist.
 - Fire Investigations -Birmingham, AL (2003-2017), Conducted numerous complex fire investigations through subrogation, including collection of evidence, depositions, and trial.

Contact Information

(850) 475-1378
hpeete@rimkus.com

826 Creighton Road.
Suite 101A
Pensacola, FL 32504

- Subject Matter Expert/Education
 - City of Pelham Fire Department - Pelham, AL (2002-2015), Shift fire instructor
 - City of Montevallo Fire Department - Montevallo, AL (1993-2003), Monthly fire instruction
 - Valley Elementary School - Pelham, AL (1990-2015), Fire prevention instruction
 - Montevallo Elementary School - Montevallo, AL (1995-2000), Fire prevention instruction
 - Montevallo Elementary School - Montevallo, AL (1995-2000), Fire drill Instruction
 - Montevallo Middle School - Montevallo, AL (1995-2000), Fire drill Instruction
 - Montevallo High School - Montevallo, AL (1995-2000), Fire drill Instruction
 - University of Montevallo - Montevallo, AL (1995-2000), Fire drill Instruction, Residence Hall Director and Residence Assistant Fire Prevention
 - University of Montevallo - Montevallo, AL (1995-2000), Dormitory fire drill Instruction
 - University of Montevallo Speech & Hearing Clinic - Montevallo, AL (1995-2000), Fire Drill & Fire Prevention Instruction
 - Daycare Facilities - Montevallo, AL (1995-2000), Fire prevention instruction.
 - State of Alabama Head Start Programs - Montevallo, AL (1995-2000), Fire prevention instruction

Forensic Engagements

- Fires/Explosions
 - Pensacola, FL (2018), evidence collection and report preparation of fire incident in industrial facility.
 - Range, AL (2018), heavy equipment fire involving Caterpillar feller buncher.
 - Pensacola, FL (2017), electrical device fire, involving improperly installed electric service.

Professional Experience

- Rimkus Consulting Group, Inc. 2017 - Present
 - Fire Consultant - Fire Division
 - Responsible for investigating fire and explosion causation in commercial

facilities, residential structures, automobile, marine vessels, and heavy equipment. Investigated fires involving appliances and electrical devices; assess the potential liability and subrogation issues; collected, documented, and preserved evidence to ensure chain of custody; conducted interviews with witnesses, responding firefighters, state fire marshal agencies, and other pertinent third party individuals and organizations. Prepares detailed, written investigative reports pertaining to the origin and cause of fire losses. Provides expert technical and scientific support to clients for subrogation and litigation purposes.

- Crane & Associates, Inc. 2003 - 2017
 - Fire Investigator
Responsible for fire origin and cause determination, diagramming of fire scene, interviewing witnesses, completing detailed written reports, photographic documentation of the fire scene, the collection, documentation and processing of evidence, provided expert testimony during depositions and courtroom testimony. Has been the lead investigator in more than 1000 fires involving residential and commercial structures, vehicles, and wildlands.
- Crain Massengale Inc. 2002 - 2003
 - Fire Scene Technician
While training to become a fire investigator, assisted senior investigators in the determination of the origin and cause of fires. Assisted with diagramming of fire scene, interviewing witnesses, completing detailed written reports, photographic documentation of the fire scene, the collection, documentation and processing of evidence.
- City of Pelham, Alabama Fire Dept. 1990 - 2015
 - Fire Lieutenant
Directed the operation of engine and truck companies providing both fire and EMS services in emergency and non-emergency situations. Conducted training classes on the company, shift, and department level. Conducted pre-fire surveys of buildings. Provided fire safety classes to adults and children. Responded to and investigated the origin and cause of fires while on shift.
- City of Montevallo, Alabama Fire Dept. 1995 - 2000
 - Fire Marshal
Responsible for building and life safety code enforcement, the

investigation of the origin and cause of fires, and fire safety instructions to the public.

Education and Certifications

- Public Safety Administration, B.S.: Athens State University (1998)
- Applied Science, Fire Science Management, A.A.: Shelton State Community College (1996)
- Certified Fire Investigator: International Association of Arson Investigators #06-019
- Certified Vehicle Fire Investigator: National Association of Fire Investigators #10187-4671V
- Certified Fire and Explosion Investigator: National Association of Fire Investigators #10187-4671
- Certified Fire Officer II: Alabama #02256
- Certified Hazardous Materials Technician: Alabama #T2540
- Certified Hazardous Materials First Responder: Alabama #HMR0661
- Certified Fire Officer I: Alabama #FO766
- Certified Fire Instructor I: Alabama #I3780
- Certified Fire Fighter II: Alabama #F2-2271 (1997)
- Certified Apparatus Operator- Aerial: Alabama #AA0008
- Certified Fire Investigator: Alabama #FI 078
- Certified Fire Inspector I: Alabama #INS 039
- Certified Apparatus Operator: Alabama #A 1186
- Certified Fire Fighter I: Alabama #F3700
- Certified Emergency Medical Technician - Basic: Alabama #901269
- Memberships: Alabama Association of Arson Investigators; International Association of Arson Investigators; National Association of Fire Investigators; Fire Investigators of Florida

Continuing Education

- CFITrainer.net: Explosion Dynamics (2016); Fundamentals of Interviewing (2016); Evidence Examination: What Happens at the Lab? (2016); Documenting the Event (2016); Critical Thinking (2016); Basic Electricity (2016); Using Resources to Validate your Hypothesis (2016); Residential Natural Gas Systems (2016); Residential Electrical Systems (2016); Wildland Fires Investigation (2015); Investigating Motor Vehicle Fires (2010); Ventilation (2010); Post Flashover Fires (2010); Fire Investigator Scene Safety (2009); Annual Training Conference (2009); Managing Complex Fire

Scene Investigations (2008); Digital Photography and the Fire Investigator (2006); Ethics and the Fire Investigator (2006)

- International Association of Arson Investigators: The Practical Application of the Relationship between NFPA 1033 & 921 (2016); Annual Training Conference (2014); Annual Training Conference (2007); Expert Witness Testimony (2005)
- Alabama Association of Arson Investigators: Advanced Fire Investigation Seminar (2016); Advanced Arson Seminar (2009); Advanced Arson Seminar (2008); The Litigation Process for Fire Investigation Personnel (2004); Fire Investigation Workshop (2003); Basic Fire Investigation (2003)
- City of Pelham: High Angle Rope Rescue (2003); Ethics 4 Everyone (2003); Radiological Emergency Response Training (1995); Fire Fighter I (1990); BREMSS First Responder (1990)
- Alabama Fire College: Hazardous Material Technician (1999); Fire Officer II (2000); Hazardous Materials First Responder (1999); Confined Space Rescue (1999); Fire Officer I (1998); Fire Fighter II (1997); Apparatus Operator - Aerial (1997); Fire Service Supervision (1996); Building Construction for the Fire Service (1995); Apparatus Operator (1994); Haz-Mat: Awareness & Operational (1992); NFA Incident Command System (1991); Vehicular Extrication (1989); Strategies and Tactics (1988)
- Other: Wildland Fire Fighting (I-100, L-180, S-130, & S-190) (2011); HME/Drug Lab Dual Precursors BATFE (2011); FD Safety Officer: Incident Safety Officer (2010); Mass Casualty Incident Exercise (2010); N.A.F.I. Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar (2004); Occupational Airbag Inflatable Restraint Education (2004); NFPA Life Safety Code Seminar (1996); FMANA Principles of Fire Protection (1996); Emergency Medical Technician (Basic) (1990)

Publications/Presentations

- "Spontaneous Combustion or Not." Alabama Association of Fire Investigators Fall Seminar, 2016
- "Subrogation" Pensacola CME Event, 2018



Rimkus Consulting Group, Inc.
560 Southwest 12th Avenue
Deerfield Beach, Florida 33442
(800) 861-7644 Telephone
(954) 428-1849 Facsimile
Certificate of Authorization No. 8301

July 19, 2018

Re: RCG File No: 41424290
LLV Number: 3315220
VMF Location: 1950 West Oakland Park Boulevard Oakland Park, Florida
Subject: Preliminary/Final Report

Dear

On June 19, 2018, a fire involving USPS LLV 3315220 reportedly occurred after returning to the USPS Inverrary facility located at 6240 West Oakland Park Boulevard in Lauderdale, Florida. The vehicle was manufactured by General Motors in 1993 and was a Grumman model LLV-93 RH with VIN 1GBCS1046R2901427.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Ft. Lauderdale VMF located at 1950 West Oakland Park Boulevard in Oakland Park, Florida. In the course of our work, we inspected, photographed, and reviewed the vehicle repair and maintenance orders on July 5, 2018. The vehicle examination was conducted by Fire Consultant Robert Hernandez, IAAI-CFI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations" and NFPA 1033 Standard for "Professional Qualifications for Fire Investigator".

Conclusions

1. The vehicle sustained moderate to severe fire damage to the engine and operator compartments from a fire originating within the engine compartment.

2. The area of origin was determined to have been on the left hand, mail side of the engine compartment, along the bulkhead/dashboard adjacent to the rear of the 2.2 liter, L-4 engine.
3. The specific ignition sequence and cause of the fire was inconclusive due to the severity of damage in the area of origin, however the possibility that adverse electrical activity occurred to one of the conductors or switches connecting to the blower motor or other components in the area of origin could not be eliminated.
4. The rear interior storage mail/compartment sustained minor to moderate smoke and soot damage.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The front grill and lights of the LLV were observed to be intact with no fire damage. A burn through hole was observed on the hood of the mail side of the engine compartment, from the middle of the compartment towards the bulkhead. The aluminum roof of the vehicle that covered the operator's compartment had melted as a result of the fire. The driver's side door and frame adjacent to the steering wheel had also been melted by the fires extension. The mail side of the engine compartment exterior aluminum frame was melted to just above the wheel well, however the door was mostly intact, indicating the fire had extended from the mail side towards the driver side of the passenger compartment.

No damage was observed to the exterior cargo area of the vehicle with the exception of blistered paint on the roof corresponding with fire spread from the direction of the engine and operator compartments. Based on the fire patterns observed, it was determined the fire initiated within the engine compartment near the bulkhead/dashboard then progressed into the operator's compartment through the windshield and bulkhead.

Interior Inspection:

The interior cargo/mail area sustained minor to moderate fire, smoke, and soot damage. Fire patterns indicated the fire melted the aluminum panel between the operator's and cargo compartment. Moderate smoke and soot damage was observed along the ceiling

and upper side walls of the cargo space. Fire debris from the operator's compartment was observed on the floor of the cargo compartment.

The operator's compartment sustained severe fire and heat damage. Most of the combustible materials located within this area were consumed by the fire, including the fuse panel and various electrical conductors in the dashboard area on the driver's side. Fire patterns indicated this was the result of the fire's extension from the engine compartment near the bulkhead/dashboard on the mail side. The most severe damage was observed on the mail side of the compartment, where the bulkhead had completely burned through from the direction of the engine compartment. The bulkhead was mostly intact on the driver's side. The bundled wiring harnesses on the driver's side connecting from the fuse panel towards the Engine Control Module (ECM) sustained severe fire damage. The ECM had been positioned in the center of the dash and was observed with severe fire damage. The burn through hole in the bulkhead was observed to the left of the ECM. The remnants of an electric fan was found in the fire debris along the burned through area of the bulkhead.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment was observed with moderate to severe fire damage. The driver's side contained the brakes master cylinder, battery, alternator, rubber and plastic components and the majority of the electrical conductors within the compartment. The ignition coil and fuel lines were also on this side. However, this side of the compartment sustained mostly minor fire damage. Most of the components were observed to be intact with very little melting. Fire patterns indicated that the moderate damage to the front of the engine compartment, including the radiator, fan blades, pulleys and hoses were caused by radiated heat originating from the center and bulkhead area of the mail side. No evidence was observed of the fire originating within the brakes, wheel hubs or tires in the area of the engine compartment.

The majority of damage to the engine compartment occurred on the mail side between the rear of the engine block and along the bulkhead/dashboard. Fire patterns indicated this was the area of origin. Various conductors and switches connecting to the mail side headlights, flashers, heater and fan blower motor were located in this area and were observed with severe fire damage. The spark plugs, plug wires and rubber boots were located a little further towards the front of the engine compartment and were intact,

except the plug wires had apparently been consumed by the fire. The fuel lines came up along the rear of the engine and turned to the driver's side of the engine compartment. The fuel lines were observed to be intact in this area. Fire patterns indicated the fire originated further to the mail side along the bulkhead where they extended into the mail side of the operator's compartment.

The battery for the vehicle was located at the front driver's side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be severely damaged by fire however, intact; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid, and brake fluid were examined and observed to be within their normal operating range.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle, except for a limited area below the rear of the engine compartment that appears to have been caused by drop down from above. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head. All four tires were intact.

Fuse Panel Inspection:

The fuse panel positioned behind the instrument panel in the dashboard on the driver's side sustained severe fire damage. However, no evidence of adverse electrical activity was noted. The respective wiring harness associated with the fuse panel was inspected and did not reveal any unexpected damage from a fire with this intensity.

Fire patterns indicated the damage to the fuse panel was due to the fires extension from the mail side of the engine compartment.

Area of Fire Origin:

The area of origin was determined to be the rear of the engine compartment, along the bulkhead/dashboard on the mail side of the engine. Various electrical conductors in bundled harnesses were observed near this area with all of the insulation burned off.

Some of the bundled harnesses came through the bulkhead from inside and under the dashboard. The electrical conductors could not be examined more closely due to the severity of damage in the area, however no adverse electrical activity was observed to the remaining conductors. Electrical components in this area were the conductors and switches for the mail side headlights, flashers, heater and fan blower motor.

Potential Contributing Factors:

A review of the USPS service records revealed that the last service had been conducted on February 8, 2018, approximately four months before the fire. The vehicle had an unscheduled service performed one week before the fire to repair a misfire. Mr. Gonzalo Barral, supervisor and our contact at the Ft. Lauderdale VMF location stated that the scope of the work involved replacing the spark plugs, plug wires, ignition coil and ignition module. All of these items were positioned away from the area of origin and were observed with less damage except for the plug wires which were consumed by the fire. Fire patterns do not support the fire originating from the position of the plug wires.

Other possibilities considered included a fuel leak, however no evidence of a spray pattern, hot surface ignition or fuel leak was observed. A backfire was considered due to the previous service repair for a bad misfire, however the spark plugs were observed to be intact, the vehicle did not have a carburetor and no evidence of a misfire caused fire event was observed. The probable cause was an unspecified electrical event occurring within the conductors or switches along the mail side bulkhead/dashboard area of the engine compartment. A potential cause may have been a loose connector or zip tie for the bundled electrical conductors that may vibrated loose or caused a pinched or high resistance connection.

Evidence Collected:

The ECM, positioned inside of the dashboard was observed with severe fire damage and was collected to be examined more closely by engineers in the laboratory. The remaining condition of the components within the area of fire origin would unlikely reveal any relevant data from testing the remnants.

Interview:

On July 6, 2018, a phone interview was conducted with vehicle operator. Ms. stated that she had returned to the Inverrary USPS facility to pick up another mail package. She stated that within 1 block of leaving the facility she noticed the

steering wheel started to vibrate and the vehicle felt like it was going to stall. She immediately turned the vehicle around and drove back to the Inverrary station. She stated that the vehicle continued to drive poorly until she stopped at the station. She stated she shut off the engine and went to notify her supervisor of the problem. She saw smoke from the vents and wheel well. Before she could notify her supervisor, the vehicle was in flames.

Service Records:

Service records going back 2 years were obtained and reviewed. Below is a listing of the most current repairs performed on LLV 3315220:

- 06/11/18 Runs rough, misfire (replace spark plug wires, spark plugs, ignition coil and ignition module)
- 02/08/18 Preventive Maintenance was last performed
- 01/18/18 Would not start (ignition switch bad and fuel pump relay bad- Replace fuel pump relay and ignition switch)

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,

RIMKUS CONSULTING GROUP, INC.

Robert Hernandez

Robert Hernandez, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

July 19, 2018
RCG File No. 41424290

Photograph 1

View of the front operator's side of the 1993 Grumman LLV # 3315220. Note the fire patterns on the mail side of the hood.



Photograph 2

View of the rear of the vehicle.



Photograph 3

View of the operator's compartment. Note the position of the fuse pane (yellow) and the ECM (red).



Photograph 4

Closer view of the conductors connected to the fuse panel.



Photograph 5

Closer view of the fire damaged ECM.



Photograph 6

View of the mail side of the operator's compartment. Note the bulkhead was burned through to the engine compartment while remaining intact on the driver's side.



Photograph 7

Closer view of the area of origin. Note the most severe damage is at the position where the bulkhead/dashboard had been positioned.



Photograph 8

Another view of the area of origin from the operator's compartment showing the conductors in the area.



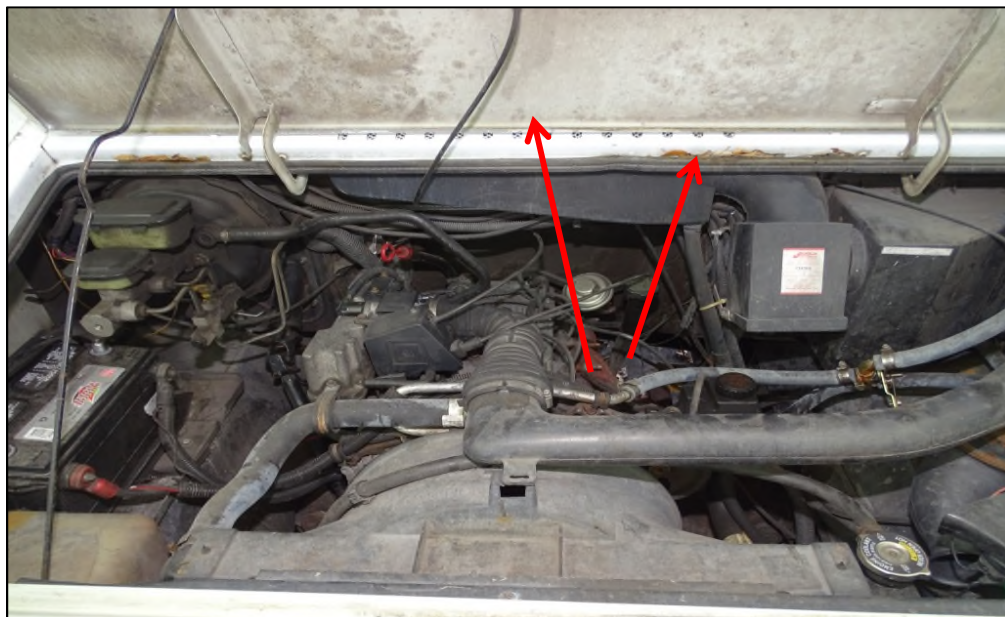
Photograph 9

View of the engine compartment. Note the severe damage on the mail side and the relatively minor damage on the driver's side. Arrows indicated the direction of fire spread.



Photograph 10

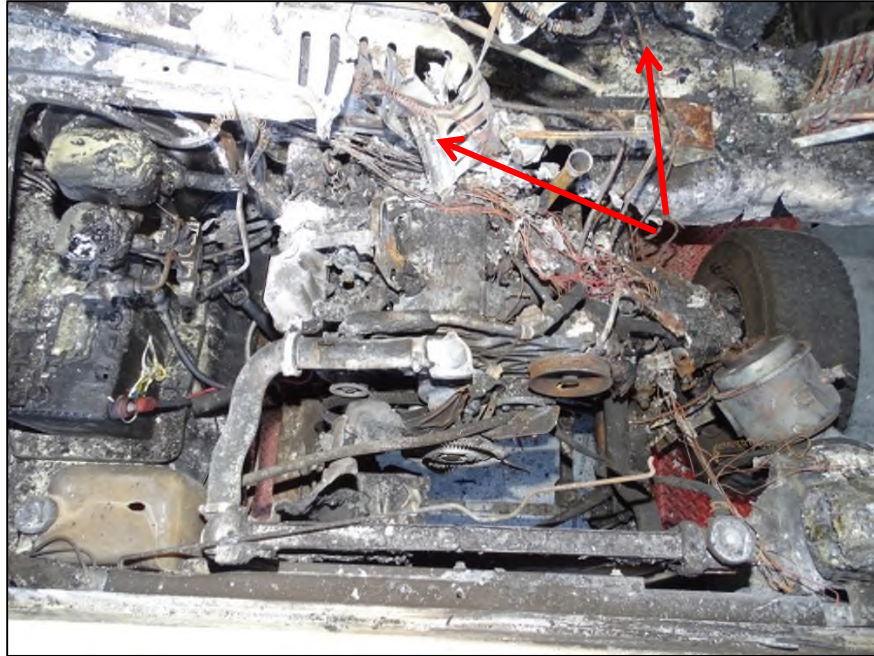
View of an exemplar vehicle showing the components in the area of origin including bundled electrical conductors.



July 19, 2018
RCG File No. 41424290

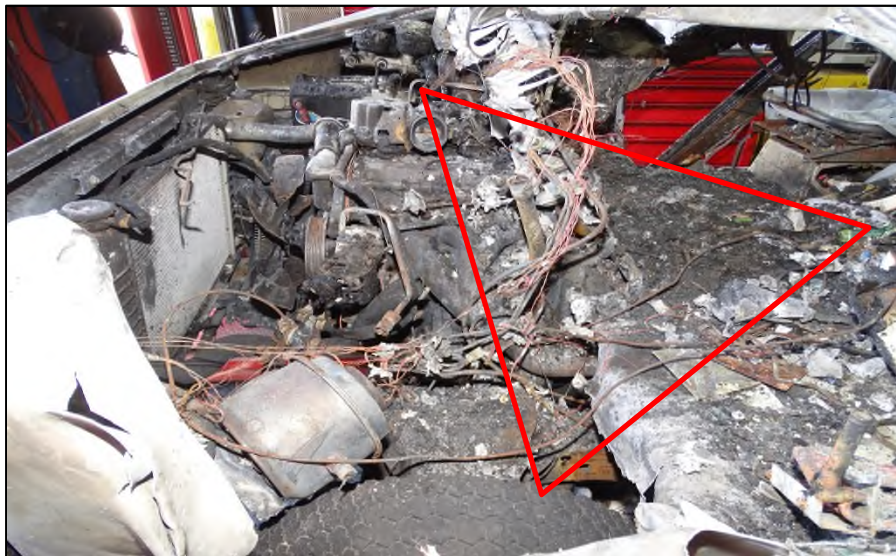
Photograph 11

View from above showing the fire damage on the mail side along the bulkhead/dashboard.



Photograph 12

Another view showing the direction of fire spread.



July 19, 2018
RCG File No. 41424290

Photograph 13

View of the fire damaged electrical conductors and blower fan housing in the area of origin.



July 19, 2018
RCG File No. 41424290

CVs



ROBERT HERNANDEZ IAAI-CFI, NAFI-CFEI FIRE CONSULTANT

Mr. Hernandez is a 1986 graduate from Miami-Dade College with a degree in Fire Science. He is a Certified Fire Investigator with the International Association of Arson Investigators (IAAI-CFI) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). Mr. Hernandez is a State of Florida licensed Fire Investigator, a State of Florida Licensed Fire Inspector and a State of Florida Licensed Private Investigator. He is a member of Florida Task Force 2 (FLTF2) and has extensive experience in Urban Search and Rescue including Structural Collapse, Confined Space and Vehicle Machinery Extrication. He served the City of Miami for 34 years and was a Lieutenant with the City of Miami's Technical Rescue Team and a Fire Investigator in the City's Fire Investigation Unit. As a member of the Fire Investigation Unit, Mr. Hernandez investigated and determined the origin and cause involving commercial structures, residential structures and vehicles. He collaborated with multiple agencies including the State Fire Marshal, Alcohol, Tobacco and Firearms (ATF), local police, insurance companies and legal agencies during large loss incidents.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.S. – Fire Science - Miami-Dade College, Miami, Florida

EMPLOYMENT HISTORY

2016 – Present	Rimkus Consulting Group, Inc.
2012 – 2016	Casino Miami
2005 – Present	Florida Task Force 2
1981 – 2015	City of Miami Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
560 Southwest 12th Avenue
Deerfield Beach, FL 33442
(954) 428-1422 Telephone
(954) 428-1849 Facsimile
Certificate of Authorization No. 8301

January 26, 2016

Re: RCG File No: 41418188
LLV Number: 3315550
VMF Location: 950 West Oakland Park Boulevard in Hollywood, Florida
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 3315550 that occurred at 4171 Hallandale Beach Boulevard in Hollywood, Florida on November 20, 2015. In the course of our work, we examined and documented the fire-damaged vehicle on December 4, 2015. An interview was conducted with the mail carrier that witnessed the fire incident on December 15, 2015.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 950 West Oakland Park Boulevard in Hollywood, Florida. The work to complete this assignment was performed by Fire Consultant Mr. Alexander F. Kapczynski, IAAI-CFI. This report and case was reviewed by Mr. Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The area of fire origin was determined to be in the engine compartment of the involved LLV.
2. The specific area of origin was determined to be in the center of the engine compartment in the area of the air intake where it was routed over the first spark plug wire.

3. The specific ignition sequence and cause for the fire was determined to be an electrical event that involved the first spark plug wire which caused adverse electrical activity and the wire to become arc severed.
4. Evidence was examined and the cause was confirmed in the lab. No other potential causes were found.

Observations

Exterior Inspection:

The exterior examination of the vehicle revealed minor fire damage to the front hood of the vehicle, above the engine compartment. Heat damage was observed in the center of the hood towards the windshield.

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments revealed no evidence of soot, smoke, heat or fire damage.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the engine compartment. The engine compartment sustained minor damage and the fire appeared to have been extinguished quickly. Fluid levels were observed to be within normal limits. The battery and the main positive and negative conductors were examined and were observed to be free of fire damage or adverse electrical activity. The electrical wiring harness sustained damage where it crossed the front end of the valve cover and near the position of the first spark plug wire. The air intake duct, positioned above the first and second spark plugs, sustained severe damage. The spark plug wire connected to the first spark plug sustained the greatest damage as compared to the remaining spark plug wires. The first spark plug wire was severed and a section of the wire was observed to be missing.

Undercarriage Inspection:

Examination of the undercarriage revealed no evidence of soot, smoke, heat or fire damage. The involved LLV was mounted on a General Motors (GM) frame. The fuel filter was examined during the undercarriage examination and was positioned on the left side of the vehicle. The fuel lines ran along the left side of the vehicle and entered the engine compartment from the rear of the engine. The fuel lines and filter system were not involved in the ignition of the fire. The vehicle had a GM fuel filter system.

Fuse Panel Inspection:

Examination of the fuse panel located within the operator's compartment revealed no evidence of soot, smoke, heat or fire damage. The fuse panel did not have a cover. The fuses were examined and no blown fuses were observed.

Area of Fire Origin:

The area of fire origin was determined to be in the center of the engine compartment where the air intake duct was positioned over the first spark plug wire.

Potential Contributing Factors:

Prior to the fire incident, the vehicle was reported to have engine misfiring issues. The morning of the fire, the vehicle was serviced at the USPS VMF and the spark plugs were changed. After review of the maintenance records, it was observed that the vehicle had an extensive history of "unable to start" or "stalling" incidents.

Evidence Collected:

During the vehicle inspection, several items of evidence were collected from the fire damaged vehicle. The items of evidence were then transferred to our Charlotte, North Carolina office for further inspection and analysis. The following items were collected during our December 4, 2015 vehicle inspection:

- Exhibit A - Remnants of spark plug wire and spark plug from cylinder 1.
- Exhibit B - Remnants of spark plug wire and spark plug from cylinder 2.
- Exhibit C - Wiring harness with color coded tie wraps. Pink tie wraps were placed on the positive conductors. Green tie wraps were placed on the ground conductors. Yellow tie wraps were attached to the starter. Yellow and orange tie wraps were attached to the alternator.
- Exhibit D - Remnants of the air intake duct.

Interviews:

A phone interview was conducted with the mail carrier on December 15, 2015. She stated that she was not the regular mail carrier for the route where the fire occurred. LLV 3315550 was not her normal vehicle. The vehicle had been misfiring, even after being serviced the morning prior to the fire incident. During the route she stopped the vehicle and began to speak with a customer. The customer noticed smoke coming from the engine compartment. The hood was opened and the customer used water to extinguish the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Alexander F. Kapczynski

Alexander F. Kapczynski, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

January 26, 2016
RCG File No. 41418188

Photograph 1
Front view of LLV 3315550.



Photograph 2
Exterior fire damage was observed in the center and towards the windshield of the front hood.



January 26, 2016
RCG File No. 41418188

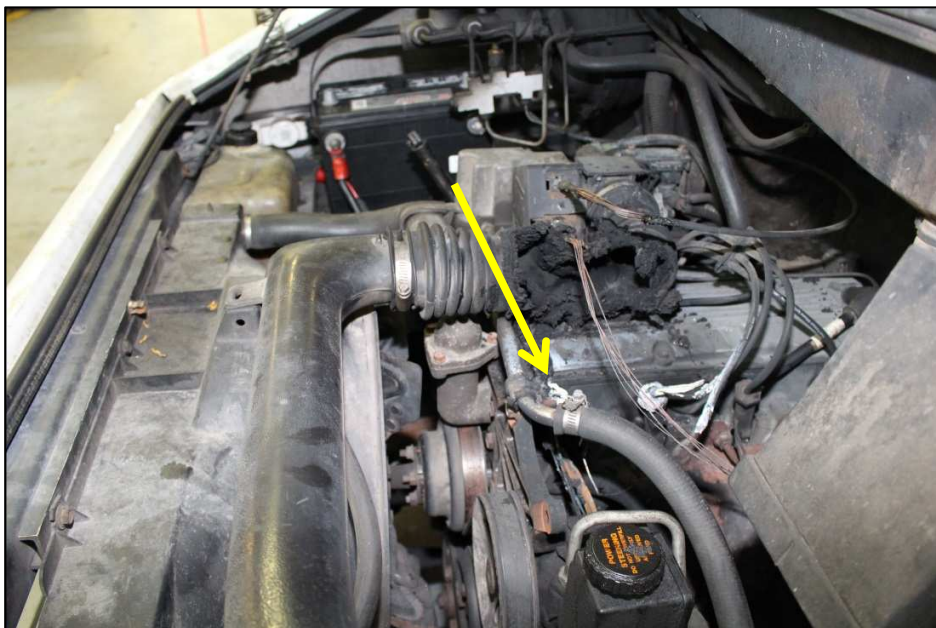
Photograph 3

Area of origin within the engine compartment.



Photograph 4

View of fire damage from the left side of the vehicle. The first spark plug wire was severed and a section of the wire was missing.



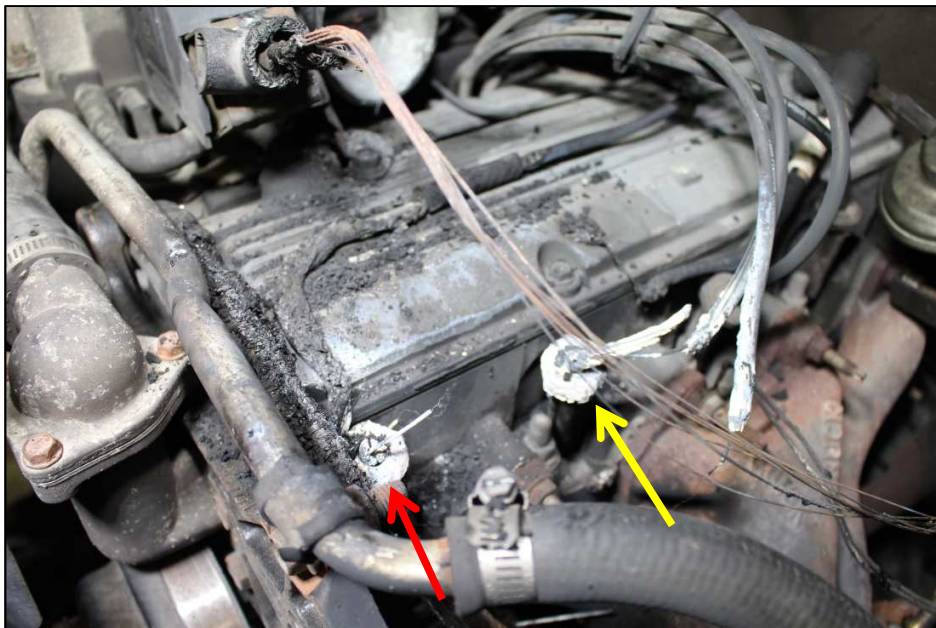
Photograph 5

View of the fire-damaged air intake duct that had been positioned above the first and second spark plug wires.



Photograph 6

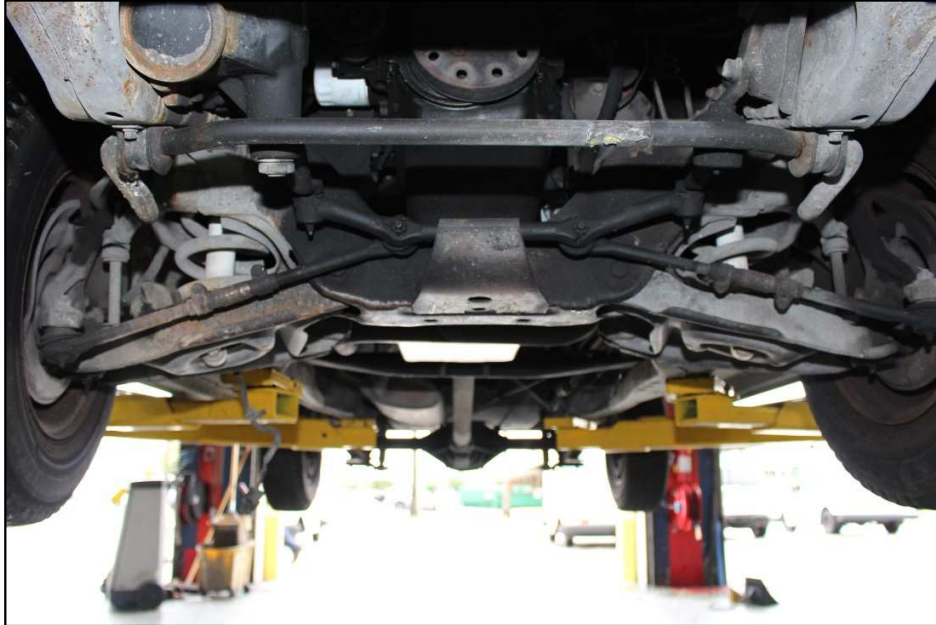
Red arrow indicates position of the first spark plug and yellow arrow indicates position of the second spark plug.



January 26, 2016
RCG File No. 41418188

Photograph 7

The undercarriage of the vehicle was inspected and no fire damage was observed.



Photograph 8

Examination of the in-line fuel filter and fuel lines revealed no fire damage.



January 26, 2016
RCG File No. 41418188

Photograph 9

The alternator appeared to be newer and was free of fire and electrical damage.



Photograph 10

The wiring harness was removed and collected from the fire-damaged vehicle.



January 26, 2016
RCG File No. 41418188

CVs



**ALEXANDER F. KAPCZYNSKI, IAAI-CFI
FIRE CONSULTANT**

Mr. Kapczynski is a Certified Fire Investigator with the International Association of Arson Investigators (IAAI-CFI), the National Board of Fire Service Professional Qualifications and a New York State Certified Level II Fire Investigator with the New York State Office of Fire Prevention and Control. Mr. Kapczynski is a licensed private investigator in the State of Florida. He served in the City of Albany Fire Department for over twenty one years and was a Lieutenant in the City of Albany's Fire Investigation Unit (FIU) for approximately four years. As a member of the FIU, Mr. Kapczynski investigated and determined the origin and cause involving commercial structures, residential structures and vehicles. Mr. Kapczynski has testified on multiple occasions in criminal proceedings pursuant to his duties as a fire investigator.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

City of Albany Fire Department, Albany, New York
Firefighter Essentials, 1992

Hudson Valley Community College, Troy, New York
Emergency Medical Technician Paramedic Level, 1996

Corning Community College, Corning, New York
Associates Degree, Fire Protection Technology, 1997

New York State Fire Academy, Montour Falls, New York
Hazardous Materials Specialist Training, 1998

New York State Fire Academy, Montour Falls, New York
Fire Behavior & Principles of Fire Investigation, 2007

New York State Fire Academy, Montour Falls, New York
Fire Arson Investigation, 2007

International Association of Arson Investigators, Rutland, Vermont
Advanced Fire Investigation Techniques Seminar, 2008

New York State Fire Academy, Montour Falls, New York
Electrical Cause Determination I & II, 2009

International Association of Arson Investigators, Charlotte, North Carolina
Expert Report Writing, 2010

New York State Fire Investigators & ATF, Colonie, New York
Arc Mapping Seminar, 2010



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
1431 Greenway Drive, Suite 900
Irving, TX 75038
(877) 271-1168 Telephone
(972) 518-0011 Facsimile

Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2018

September 29, 2017

Re: RCG File No:

LLV Number: 02215117
VMF Location: 3316394
Subject: 3920 South Cooper Road Arlington, Texas 76015
Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine a vehicle fire loss involving a USPS LLV 3316394 that occurred at South Hughes & Windowmere Street in Fort Worth, Texas on September 6, 2017. In the course of our work, we examined and documented the fire-damaged vehicle and interviewed the VMF Manager on September 19, 2017.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 3920 South Cooper Road in Arlington, Texas. The work to complete this assignment was performed by Fire Consultant Gary L. Cochran, IAAI-CFI. A technical review of this report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated on the underside of the engine compartment and involved a failure of a fuel line.
2. Fugitive atomized fuel escaping from the failed line was ignited by the operating components of the exhaust system.

3. Potential contributing factors for the failure of the line and cause of the fire may have been deterioration to the rubber fuel lines due to aging that resulted in cracks, failures, or possible separation at one of the manufactured connections.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed on the exterior of the LLV. The cover over the cab area of the vehicle had melted and/or been consumed by the fire as had the covering for the engine compartment. Severe fire damage was observed to both the left and right front fenders as well as the top of the LLV. Fire damage was also observed to the rear rollup door to the LLV. The left front tire was observed with severe fire damage; the three remaining tires were inflated and observed with no fire damage.

Interior Inspection:

Examination of the interior of the LLV revealed severe fire damage to the operator compartment as well as the cargo area. The dash area of the LLV was severely fire damaged as was all electrical wiring within the dash area. The fire damage in the interior of the LLV was consistent with a fire originating in the engine compartment and progressing into the interior.

Engine Compartment Inspection:

The vehicle was equipped with a GM 2.2L gasoline engine. Severe fire damage was observed in the engine compartment. Severe fire damage was observed to the battery which was located at the right front corner of the engine compartment. The brake master cylinder and the fuel throttle body system had also sustained severe fire damage. Examination of the front of the engine compartment revealed sections of hoses and rubber belts that were intact but severely fire damaged. Electrical wiring within the engine compartment was examined but there were no indications of adverse electrical activity on the wiring.

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed the fire originated on the underside of the engine compartment.

We observed severe fire damage to the engine compartment, including total consumption of two rubber fuel lines, which connected two metal fuel lines, in the area of origin.

We were unable to examine fluids levels due to severe fire damage to the engine compartment. We examined the electrical system of the vehicle and observed no electrical activity or arcing within the electrical system. Wiring harnesses within the vehicle were all intact, however, the synthetic insulation of conductors had been burned away as a result of the fire. The battery cables had been disconnected prior to our examination.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of fire damage in the area of fuel lines, transmission pan, and steer tire frame. The involved LLV was mounted on a GM frame. Evidence was observed below the vehicle involving the bottom side of the frame, transmission, and exhaust system that suggested atomized fuel that had been sprayed onto these areas. Both supply and return rubber fuel lines were consumed as a result of the fire.

Fuse Panel Inspection:

The fuse panel was examined and due to severe fire damage to the fuse panel we were not able to determine any failures within the fuse panel.

Area of Fire Origin:

The area of fire origin was identified as the underside of the engine compartment near the transmission where two metal fuel lines were attached to the top of the transmission and frame rail. The two rubber fuel lines were originally connected with factory pressed hose clamps. Both rubber hoses were consumed as a result of the fire.

Contributing Factors:

Potential contributing factors to the fire may have been deterioration to the rubber fuel lines due to aging that resulted in cracks, failures, or possible separation at one of the manufactured connections.

Evidence Collected:

No evidence was collected from the examination.

Interviews:

Mr. , Vehicle Maintenance Manager, was interviewed and stated he was notified of the fire on September 6, 2017, and immediately responded by going to the fire scene. By the time he arrived, the fire had already been extinguished by the fire department and already had departed from the scene. During his examination, he noticed raw fuel expelling from the return side fuel line and took steps to correct this before it was transported back to Arlington VFM.

Reportedly, the operator of the vehicle at the time of the fire had parked it against the curb, turned the vehicle off, and then turned the vehicle to "Accessory" mode so the fan would blow. Shortly afterwards, she noticed smoke coming from the driver's side of the vehicle near the front left tire area. She turned the key off and exited the vehicle to determine where the smoke was coming from. When she reached the driver's side of the vehicle, she observed flames beneath the engine compartment and immediately called 911. No problems were reported with the vehicle prior to the fire, and the LLV was her regular vehicle that she used daily.

Service Records

Maintenance records supplied by Mr. indicated the last time it was in the shop was June 6, 2017, for a routine preventive maintenance. Several items had been replaced or repaired during the preventive maintenance but none relevant to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gary L. Cochran

Gary L. Cochran, IAAI-CFI
Project Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CV

September 29, 2017
RCG File No. 02215117

Photograph 1

View of driver's side of vehicle. Area of origin indicated by arrow.



Photograph 2

View of fire damage to mail side and rear of vehicle.



Photograph 3

View of fire damage to engine compartment and area of origin.



Photograph 4

View of two rigid fuel lines, with rubber fuel lines totally consumed.



September 29, 2017
RCG File No. 02215117

Photograph 5
Interior of the vehicle.



Photograph 6
Engine Compartment.



September 29, 2017
RCG File No. 02215117

CVs



**GARY L. COCHRAN, IAAI-CFI, NAFI-CFEI & CVFI
FIRE CONSULTANT**

Mr. Cochran has more than 30 years of experience in fire service. He has actively served as a Fire Investigator for two separate municipalities, and has served as an active member of the Tarrant County Fire/Arson Investigator's Association and most recently with the Grapevine Fire Department, Texas, as the Fire Code Enforcement Officer and Fire Investigator. He was also the Fire Code Enforcement Officer and Fire Investigator for the Town of Westlake, Texas. Mr. Cochran has extensive training in fire and criminal investigations, as well as hazardous material, nuclear, chemical, and biological and EMS incidents. He is certified through the International Association of Arson Investigators as a Certified Fire Investigator (IAAI-CFI) as well as the National Association of Fire Investigator as a Certified Fire and Explosion Investigator (NAFI-CFEI) and Certified Vehicle Fire Investigator (NAFI-CVFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Fire Protection Technology, Tarrant County College
Fire Service Administration, Weatherford College
Occupational Safety & Health, A.A.S., Columbia Southern University
International Association of Arson Investigators (IAAI), Texas Chapter, 2007 - Present
International Association of Arson Investigators (IAAI), 2007 - Present
International Association of Fire Fighters (IAFF)
National Association of Fire Investigators (NAFI), 2005 - Present
Texas Firefighters Association, 1987 - Present
Tarrant County Fire and Arson Investigators Association (TCFAIA), 2005 - Present
North Texas Fire Investigators Association (NTFIA), 2008 - Present

SPECIALIZED EDUCATION

Complex Arson Investigation Techniques for the Insurance Industry (IAAI) 2014
A.A.S. - Occupational Safety & Health, Columbia Southern University 2012
Texas IAAI Arson Conference, Austin, TX 2012
Pate Hands-On Vehicle Fires – Tested 2012
CVFI (NAFI) - Tested 2012
Texas IAAI Arson Conference, Austin, TX 2011
NFA – Forensic Evidence Collection, Emmitsburg, MD 2011
South Texas Arson Conference, South Padre, TX 2010
NFA – Fire/Arson Origin and Cause Investigations, Emmitsburg, MD 2010
NFA 25–Inspections, Testing and Maintenance of Water Based Fire Protection Systems, Houston, TX 2010
NFPA 72 - Inspections Testing and Maintenance of Fire Alarms, Houston, TX 2010
East Texas Arson Seminar, Longview, TX 2009
Certified Fire Investigator (IAAI-CFI) Tested 2009
Legal Aspect of Fire Investigations, North Richland Hills, TX 2009
East Texas Arson Seminar, Longview, TX 2008
NFA – Developing Fire & Life Safety Strategies, Emmitsburg, MD 2008
NFA – Plans review for Inspectors, Emmitsburg, MD 2007
TCLEOSE Basic Police Officer 2007
Intermediate Fire/Arson Investigator 2007
Intermediate Fire Inspector 2007
IAAI Texas Chapter Arson Seminar, Austin, TX 2007
TEEX – Courtroom Preparation for First Responders, Benbrook, TX 2006
Certified Fire and Explosion Investigator (NAFI-CFEI) Tested 2006
Advanced Firefighter 2005
Juvenile Fire Setter Intervention Specialist I & II Tested 2005
IAAI Texas Chapter Arson Seminar, Austin, TX 2005
Hazardous Material Technician School, Dallas, TX 2000
Paramedic School, Hurst, TX 1985
Basic Firefighter School, Bedford, TX 1983



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1431 Greenway Drive, Suite 900
Irving, TX 75038
(877) 271-1168 Telephone
(972) 518-0011 Facsimile

Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2016

September 20, 2016

Re: RCG File No: 02213812
LLV Number: 33106407
VMF Location: 4600 Mark IV Parkway in Fort Worth, Texas
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 3316407, with no identifiable VIN due to fire damage, which occurred on Interstate 35 W (South Freeway) in Burleson, Texas, on July 14, 2016. In the course of our work, we examined and documented the fire-damaged vehicle and interviewed the VMF Shop Supervisor, on July 19, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 4600 Mark IV Parkway in Fort Worth, Texas. Our work to complete this assignment was performed by Fire Consultant Gary L. Cochran, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigation".

Conclusions

1. The fire originated at and around the engine compartment and undercarriage on the right (driver's) side of the engine compartment.
2. The specific area of origin was determined to be at the oil pan and an operating hot surface.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of an engine rod being propelled through the oil pan causing a quarter-size hole which allowed oil to escape and be ignited on the hot surface of the operating engine and exhaust system.

Observations

Exterior Inspection:

Exterior examination of the vehicle revealed severe fire damage to the engine and operator's compartments, and moderate-to-severe fire damage to the cargo compartment.

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments, revealed severe fire damage to all compartment areas.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated on the underside of the engine in the area of the engine block. We observed severe fire damage to the engine compartment, including all combustibles within the engine compartment. We were unable to examine the oil level or the power steering fluid level due to severe fire damage to the engine compartment. We did examine the transmission fluid level which revealed some transmission fluid on the dipstick.

We examined the electrical system of the vehicle and noted no observable adverse electrical activity within the electrical system. We examined the fire-damaged wiring harnesses within the vehicle and observed no adverse electrical activity. We observed that the battery had been consumed as a result of the fire. The battery cables had been disconnected prior to our examination as a result of the fire. The vehicle was equipped with a GM fuel filter system.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of fire damage in the areas of the bottom side of the engine, as well as the sides of the engine. The involved LLV was mounted on a GM frame. In the area of origin and on the driver side of the engine near the front end of the oil pan, we observed a quarter size hole in the side of the oil pan, which indicated that possibly a rod or other engine components exited out the side of the oil pan causing oil to spill from the hole and onto the operating hot engine and hot exhaust system within close proximity of the hole.

Fuse Panel Inspection:

Examination of the remaining fire-damaged fuse panel that we observed within the engine compartment revealed no evidence of adverse electrical activity, but we did observe severe fire damage to the remains of the fuse panel. The only components left to observe were wiring conductors and metal connectors.

Area of Fire Origin:

The area of fire origin was determined to be on the operator side of the engine compartment near the oil pan area.

There was physical evidence of a quarter size hole in the operator side of the oil pan.

Contributing Factors:

During our examination, we determined that the operator side oil pan developed a quarter-size hole, possibly from an engine rod being propelled through the side of the oil pan, causing oil to spray onto the hot engine surface and/or hot exhaust system, causing the oil to ignite.

The first fuel ignited was oil from the hole in the oil pan.

Evidence Collected:

No evidence was collected during the inspection.

Interviews:

We interviewed at the Fort Worth, Texas VMF on July 19, 2016, during our inspection of the vehicle. The VMF manager stated that the carrier reported that while she was driving the vehicle, she started seeing smoke coming from the engine compartment. She pulled the vehicle off the road, and started removing as much mail as possible from the cargo compartment of the vehicle. When the fire became too large, she moved away from the vehicle and waited for the fire department to arrive. It was unknown to the VMF manager which fire department responded and extinguished the fire.

The VMF manager stated that the vehicle had been in for a routine PM on July 12, 2016, everything was normal, and all fluids were changed during the PM. The vehicle was a 1993 LLV. There had been an engine replacement in 2014 but there were no other major problems with the vehicle prior to the fire. He supplied us with maintenance records for the vehicle, and they have been attached to the file.

We have not been able to make contact with the carrier at this time, due to scheduling.

Service Records:

A review of the service records confirmed that a PM was performed on the vehicle on July 12, 2016, where the engine fluids were changed and checked. There was no other recorded recent service that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gary L. Cochran

Gary L. Cochran, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

September 20, 2016
RCG File No. 02213812

Photograph 1

View of front of vehicle.



Photograph 2

View of fire-damaged engine compartment and operator compartment.



September 20, 2016
RCG File No. 02213812

Photograph 3

View of fire-damaged engine.



Photograph 4

View of large hole on oil pan on operator side of engine.



September 20, 2016
RCG File No. 02213812

CVs



**GARY L. COCHRAN, IAAI-CFI, NAFI-CFEI & CVFI
FIRE CONSULTANT**

Mr. Cochran has more than 30 years of experience in fire service. He has actively served as a Fire Investigator for two separate municipalities, and has served as an active member of the Tarrant County Fire/Arson Investigator's Association and most recently with the Grapevine Fire Department, Texas, as the Fire Code Enforcement Officer and Fire Investigator. He was also the Fire Code Enforcement Officer and Fire Investigator for the Town of Westlake, Texas. Mr. Cochran has extensive training in fire and criminal investigations, as well as hazardous material, nuclear, chemical, and biological and EMS incidents. He is certified through the International Association of Arson Investigators as a Certified Fire Investigator (IAAI-CFI) as well as the National Association of Fire Investigator as a Certified Fire and Explosion Investigator (NAFI-CFEI) and Certified Vehicle Fire Investigator (NAFI-CVFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Fire Protection Technology, Tarrant County College
Fire Service Administration, Weatherford College
Occupational Safety & Health, A.A.S., Columbia Southern University
International Association of Arson Investigators (IAAI), Texas Chapter, 2007 - Present
International Association of Arson Investigators (IAAI), 2007 - Present
International Association of Fire Fighters (IAFF)
National Association of Fire Investigators (NAFI), 2005 - Present
Texas Firefighters Association, 1987 - Present
Tarrant County Fire and Arson Investigators Association (TCFAIA), 2005 - Present
North Texas Fire Investigators Association (NTFIA), 2008 - Present

SPECIALIZED EDUCATION

Complex Arson Investigation Techniques for the Insurance Industry (IAAI) 2014
A.A.S. - Occupational Safety & Health, Columbia Southern University 2012
Texas IAAI Arson Conference, Austin, TX 2012
Pate Hands-On Vehicle Fires – Tested 2012
CVFI (NAFI) - Tested 2012
Texas IAAI Arson Conference, Austin, TX 2011
NFA – Forensic Evidence Collection, Emmitsburg, MD 2011
South Texas Arson Conference, South Padre, TX 2010
NFA – Fire/Arson Origin and Cause Investigations, Emmitsburg, MD 2010
NFA 25–Inspections, Testing and Maintenance of Water Based Fire Protection Systems, Houston, TX 2010
NFPA 72 - Inspections Testing and Maintenance of Fire Alarms, Houston, TX 2010
East Texas Arson Seminar, Longview, TX 2009
Certified Fire Investigator (IAAI-CFI) Tested 2009
Legal Aspect of Fire Investigations, North Richland Hills, TX 2009
East Texas Arson Seminar, Longview, TX 2008
NFA – Developing Fire & Life Safety Strategies, Emmitsburg, MD 2008
NFA – Plans review for Inspectors, Emmitsburg, MD 2007
TCLEOSE Basic Police Officer 2007
Intermediate Fire/Arson Investigator 2007
Intermediate Fire Inspector 2007
IAAI Texas Chapter Arson Seminar, Austin, TX 2007
TEEX – Courtroom Preparation for First Responders, Benbrook, TX 2006
Certified Fire and Explosion Investigator (NAFI-CFEI) Tested 2006
Advanced Firefighter 2005
Juvenile Fire Setter Intervention Specialist I & II Tested 2005
IAAI Texas Chapter Arson Seminar, Austin, TX 2005
Hazardous Material Technician School, Dallas, TX 2000
Paramedic School, Hurst, TX 1985
Basic Firefighter School, Bedford, TX 1983



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
8 Greenway Plaza, Suite 500
Houston, Texas 77046
Telephone: (713) 621-3550
Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2020

February 12, 2020

Re: RCG File No: 100023834
LLV Number: 3316824
VMF Location: 2801 Washington Avenue, Houston, Texas
Subject: Preliminary/Final Report

Dear

On December 24, 2019, a fire involving USPS LLV 3316824 reportedly occurred while being operated in Houston, Texas. The vehicle was manufactured by General Motors in 1994 and was a Grumman model LLV with VIN: 1GBCS1048R2902966.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Houston VMF located at 2801 Washington Avenue in Houston, Texas. In the course of our work, we inspected and photographed the fire-damaged vehicle on January 15, 2020 and reviewed the vehicle repair and maintenance orders. The vehicle examination was conducted by Fire Consultant Joseph M. Ellington, IAAI-CFI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. Fire damage, fire movement and intensity patterns indicated the fire originated on the left side within the engine compartment.
2. Remaining available evidence suggested the source of the fire's ignition and its cause was likely related to a fugitive fluid leak (i.e. fuel, power steering, or brake)

that occurred during operation of the vehicle and subsequently ignited by the hot operating components of the exhaust system. The exact nature and source of the leak could not be conclusively identified from the remaining available evidence.

Observations

Exterior Inspection:

A single area of fire damage was observed concentrated on the left side inside the engine compartment. A portion of the left front cowling, left fender, engine hood, and front windshield adjacent this area exhibited severe heat stress and melting.

Interior Inspection:

A single area of fire damage was observed concentrated to the left side of the interior compartment, beneath the dash involving the bulkhead separating the compartment from the engine. Synthetic plastic components and the insulation of wiring in this area was melted, charred, and/or consumed. Fire damage and fire movement and intensity patterns indicated the fire originated on the opposite side of the bulkhead, inside the engine compartment, before breaching inside the interior compartment via the blower/fan housing and assembly.

Engine Compartment Inspection:

Fire damage was observed within the engine compartment on its left side concentrated in the quadrant adjacent the bulkhead separating the engine from the driver's compartment. The vehicle was equipped with a 2.2 liter four-cylinder engine with standard ignition coil.

Undercarriage Inspection:

Examination of the undercarriage revealed no evidence of fire damage or other damage to suggest or indicate the fire originated at this level or breached upward. The vehicle was mounted on a GM frame.

Fuse Panel Inspection:

One 25-Ampere fuse associated with the ignition, one 25-Ampere fuse associated with the heater/blower, one 20-Ampere fuse associated with the HORN/LPS, and one 10 Ampere fuse (unidentified) were observed blown. The remaining fuses were intact. Although blown, none of the branch conductors routed through or supplied power to components in the area of the fire's origin nor did they exhibit evidence of arc beading that might suggest failure while in an energized state.

Area of Fire Origin:

Fire damage and fire movement and intensity patterns indicated the fire originated on the left side inside the engine compartment.

Potential Contributing Factors:

Hoses, connectors, and other components within and routed through the area of the fire's origin, however, were melted, charred, or consumed during the fire and unavailable to be examined. These components include a fuel line that runs fuel vapors from the gas tank at the rear of the vehicle to a charcoal vapor cannister mounted to the left of the radiator and near the headlight.

Remaining available evidence suggests the source of the fire's ignition and its cause was likely related to a fugitive fluid leak (i.e. fuel, power steering, or brake) that occurred during operation of the vehicle and subsequently ignited by the hot operating components of the exhaust system. The exact nature and source of the leak could not be conclusively identified from the remaining available evidence.

Evidence Collected:

No evidence was removed or collected during our examination and all components were left with the vehicle for further evaluation if needed.

Interviews:

Multiple attempts were made to interview the carrier. No detailed information was provided regarding the facts and circumstances of the fire other than it, "caught fire while being driven in route", and that, "the driver saw smoke coming out of vehicle and pulled over."

Service Records:

Work performed on the vehicle by USPS personnel (Work Order 27313540 dated October 4, 2019) revealed problems and repairs with the vehicle's exhaust and fuel system components in the same general area where the fire originated.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Joseph M. Ellington

Joseph M. Ellington, IAAI-CFI
Regional Fire Division Manager

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

February 12, 2020
Rimkus File No. 100023834

Photograph 1

Exterior profile view of vehicle from left front corner.



Photograph 2

Heavily fire-damaged area inside engine compartment on left side of engine and area of fire origin.



Photograph 3

Comparison of components in same area of fire origin in undamaged exemplar vehicle.



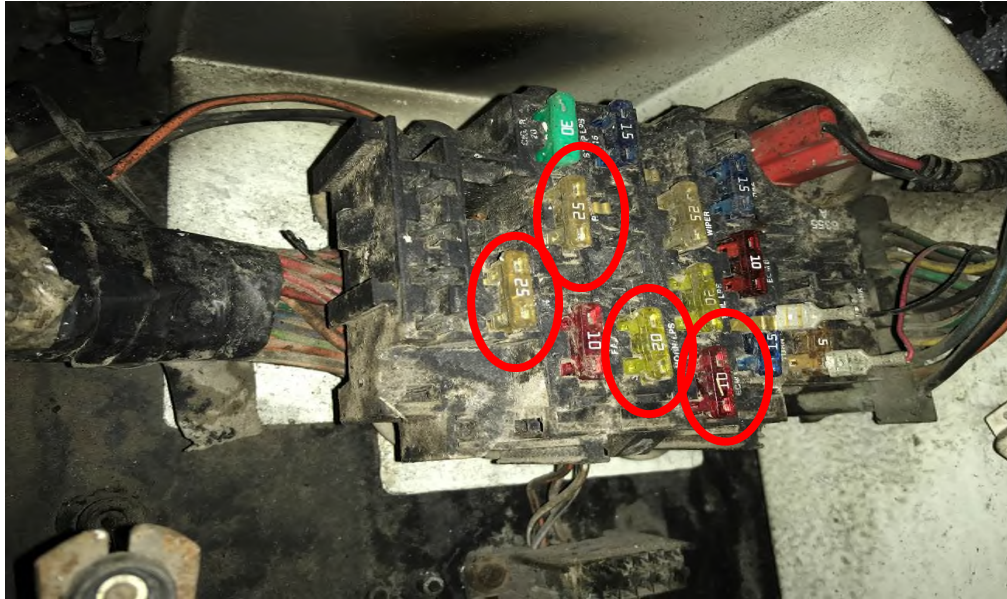
Photograph 4

Controls associated with the climate/blower system were observed in the off position.



Photograph 5

The fuses circled were 'blown', the remaining fuses were intact.



Photograph 6

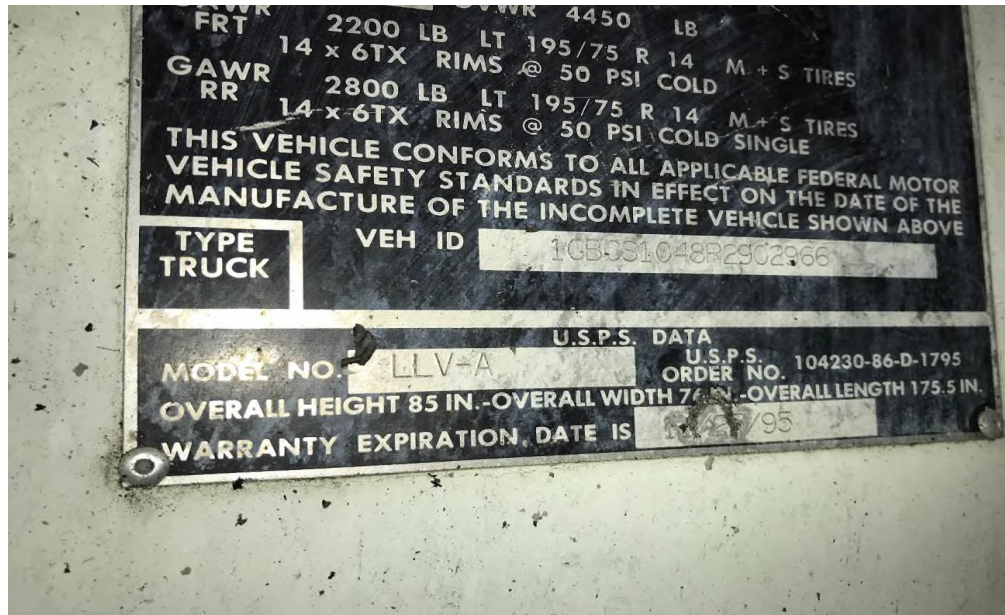
Examination of the blower motor and associated wiring revealed no evidence of internal failure.



February 12, 2020
Rimkus File No. 100023834

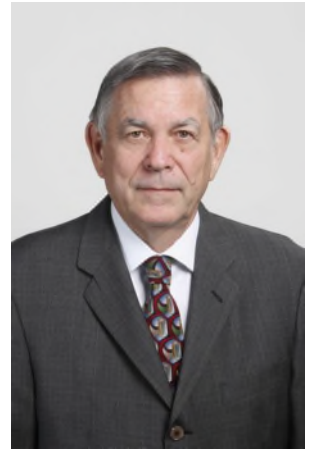
Photograph 7

VIN plate of fire-damaged vehicle.



February 12, 2020
Rimkus File No. 100023834

Curriculum Vitae



Joseph M. Ellington, CFI, CFII, CVFI

Regional Fire Division Manager
Fire Division

Background

Mr. Ellington holds a B.S. degree in Law Enforcement and is a Certified Fire Investigator with the International Association of Arson Investigators and a Certified Vehicle Fire Investigator, Certified Fire Investigation Instructor and Certified Fire and Explosion Investigator with the National Association of Fire Investigators.

He has over 35 years of broad experience in the field of advanced technical investigations including a combination of field and management assignments in both small- and large-scale fire and explosion property losses, fire death and injury cases, product defects and liability cases, arson for fraud investigations, vehicle accident investigation and reconstruction, computer forensics, premises safety and security, and training & development solutions.

Specific areas of expertise include primary responsibility for the direct management and supervision of cases where the origin, cause and responsibility of fires and explosions are at issue. These assignments involve residential, commercial, industrial, marine, offshore production platforms, wind turbines, chemical and manufacturing plants and warehouses, heavy equipment, vehicles, product liability and injury/death related fires and explosions.

Consulting expertise includes evaluation of litigation related matters involving the case areas described above as well as explosions involving LPG, natural gas, and high explosives, fire code and standards compliance, product and label warning evaluations, fire detection and response systems, fire dynamics analysis, computer fire modeling and simulation, investigation of fraud related fire incidents, computer forensics involving fire damaged systems.

Since beginning his career, Mr. Ellington has personally investigated and documented the origin of over 3,000 fires & explosions, performed hundreds of internal technical reviews of investigations performed by others, and has testified in dozens of matters with respect to issues relating to the origin, cause and responsibilities of fires and explosion in both state and federal courts.

Contact Information

(713) 621-3550

jmellington@rimkus.com

Eight Greenway Plaza,
Suite 500
Houston, TX 77046

Professional Engagements

- Subject Matter Expert
 - Online Course Development (1984-2000), Development and implementation of online training for Texas Private Investigators Licensing Exam, Computer Investigation for Private Investigators.
 - Fire Origin & Cause Analysis (1984-2005), Investigated and documented the origin and cause of over 1,800 fires & explosions.
 - Arson/Fraud investigations (1984-2000), Performed follow-up investigations of over 300 fires and explosions to evaluate and document legal responsibility for those losses.

Forensic Engagements

- Representative Fire Engagements
 - San Marcos, TX (2018), Fire origin and cause investigation involving a commercial apartment building resulting in 6 fatalities.
 - Greenville, TX (2018), Origin and cause investigation of flashfire/dust explosion involving food processing plant.
 - Port Arthur, TX (2017), Origin and cause investigation of fire involving bulk transfer and loading of wood pellets from silos to vessel moored at Port of Port Arthur.
 - Rankin, TX (2016), Origin and cause investigation of flash fire during unloading operations that resulted in fatality at saltwater injection well site.
 - Abilene, TX (2014), Fire origin and cause investigation of 2.5 Megawatt wind turbine.
 - Big Springs, TX (2014), Investigation of explosion/flashfire involving gasoline storage tank that occurred during degassing/cleaning operations at refinery.
 - Cartagena, Columbia, South America (2013), Investigation of the origin and cause of fire involving 255-ton ocean tug while in dry-dock undergoing repairs.
 - Houston, TX (2013), Investigation of the origin and cause of restaurant/hotel fire that resulted in accompanying deaths of four responding fire fighters.
 - Ciudad del Este, Paraguay (2013), Fire origin and cause investigation of large (\$3.2 million) warehouse fire.
 - The Woodlands, TX (2012), Investigated origin and cause of fire involving spontaneous ignition of residence under construction.
 - Coleville, CA (2012), Investigation and analysis of LPG explosion and flashfire involving residence on Marine Corps Training Center resulting in multiple burn injuries and fatalities.
 - Conroe, TX (2012), Investigation of LPG flashfire/explosion at propane refilling plant resulting in multiple burn injuries.
 - Austin, TX (2010), Evaluation of fire protection system response and fire damage resulting from aircraft collision with commercial building.
 - Houston, TX (2010), Fire dynamics analysis and modeling of apartment fire involving multiple fatalities.
 - Medellin, Columbia South America (2009), Fire origin and cause investigation of large (\$15 million) chemical warehouse fire.
 - Houston, TX (2009), Fire dynamics analysis and modeling of apartment fire involving multiple fatalities.
 - Wilmington, DE (2006), Analysis of impairment to fire protection system and fire department response to

20-story high-rise fire resulting in property damage and fatalities.

- San Marcos, Nicaragua (2006), Investigation of origin and cause of fire that destroyed large (10 million) clothing manufacturing plant and facility.
- Milwaukee, WI (2006), Origin and cause analysis of LPG gas explosion involving large industrial plant resulting in multiple injuries and deaths.

Professional Experience

- Rimkus Consulting Group, Inc. 2005 – Present
 - Regional Fire Division Manager – Fire Division
Primary responsibility for the direct management and supervision of consultants where the origin, cause and responsibility of fires and explosions are at issue. Fire Dynamics Analyses and Computer fire modeling/simulation. The investigation of industrial, commercial, residential, marine, aviation, offshore, wind turbine, heavy equipment and vehicle losses involving fire or explosion. Consulting and expert witness services for litigation related matters involving fire and explosion origin and cause, fire injury or death, and product liability. Fraud analysis and investigation relating to motive and/or responsibility for fire or arson losses. Fire detection, alarm, suppression, and extinguishing systems.
- EFI Global, Inc. 2001 – 2005
 - Senior Fire Investigator
The investigation of fire and explosion related losses. Consulting services to the insurance and legal professions. Management, supervision and tracking of case related physical evidence. Development and presentation of both classroom and online training courses including: Ethics for Professional Investigators, Fire and Explosion Scene Investigation, and Basic Fire Science.
- Texas Investigative Consultants 1984 – 2000
 - Fire & Explosion Consultant
Fire and explosion investigation, fraud analysis and investigation, vehicle accident investigation and reconstruction, security practices and premises liability investigations, computer forensics, training and development.
- Hicks & Sanchez Fire Investigations 1983
 - Fire Investigator
Responsible for fire and explosion investigations, fraud analysis and investigation as well as training and development of staff.
- Heliflight Systems, Inc. 1980 - 1982
 - Training and Development Consultant
Development and delivery of technical training programs, management and supervisory training, EEOC training, development of company policy and procedures manual, evaluate company security practices and

safety procedures, investigate company accidents.

- North Harris College 1976 - 1980
 - Director – Law Enforcement and Campus Security
Design, development and implementation of academic curriculum. Manage, supervise and deliver courses within the Law Enforcement degree program and Law Enforcement Academy. These courses included the Texas Penal Code, Criminal Procedure and Evidence, Criminal Investigation, Police Organization and Administration, Patrol Operations, Police Community Relations, Traffic Law, Accident Investigation and Reconstruction. Hiring and supervision of faculty and staff. Organized and chaired professional and community advisory committees. Manage and supervise campus safety and security.
- Texas Dept. of Public Safety – Texas Highway Patrol 1971 - 1976
 - State Trooper
Primary responsibilities included police and traffic patrol, general law enforcement, vehicle accident investigation and reconstruction, driver testing and licensing
- U.S. Army 1969 - 1971
 - Technical Specialist
Installation, operation, maintenance, troubleshooting and repair of fixed and portable power generation and distribution equipment, microwave, HF, troposphere scatter, satellite and cryptograph equipment and systems. Top Secret Clearance.

Education and Certifications

- Police Science, A.A.S.: South Texas Junior College (1974)
- Law Enforcement, B.S.: Sam Houston State University (1975)
- Fire Sciences/Firefighting (Post Graduate Studies): University of New Haven (2000)
- Certified Fire Investigator: International Association of Arson Investigators
- Certified Vehicle Fire Investigator: National Association of Fire Investigators
- Certified Fire Investigation Instructor: National Association of Fire Investigators
- Certified Fire and Explosion Investigator: National Association of Fire Investigators
- Certified Fraud Examiner: Association of Certified Fraud Examiners
- Memberships: National Association of Fire Investigators; International Association of Arson Investigators; International Association of Bomb Technicians & Investigators; National Fire Protection Association; Society of Fire Protection Engineers, International Code Council.

Continuing Education

- Fire and Evacuation Modeling Technical Conference, 40 hrs. (2018)
- National Fire Protection Association (NFPA)/National Association of Fire Investigators (NAFI)
 - 2016 NFPA 72, National Fire Alarm and Signaling Code, 6 hrs. (2015)

- NFPA 1033 & NFPA 921, 4 hrs. / IAAI (2009)
- NFPA 921 – Chapter 25 – Vehicle Fire Investigations, 2 hrs. (2007)
- Vehicle Fire Science & Fire Dynamics, 4 hrs. (2007)
- Vehicle Mechanical Systems, 2 hrs. (2007)
- Vehicle Fire Safety Standards, 2 hrs. (2007)
- Vehicle Electrical Systems, 2 hrs. (2007)
- Origin Determination in Vehicle Fires, 2 hrs. (2007)
- Cause Determination in Vehicle Fires, 2 hrs. (2007)
- Post-Crash Fuel Fed Fires, 2 hrs. (2007)
- Vehicle Live Burn Exercises, 8 hrs. (2007)
- Black Box Data Crash Retrieval, 1 hrs. (2007)
- Vehicle Arson, 1 hrs. (2007)
- Information and Data Resources for Vehicle Fire Investigation, 1 hr. (2007)
- Human Behavior and Fire, 4 hrs. (2006)
- Fire Detection & Alarm Systems, 4 hrs. (2006)
- Annual Conference on Fire Investigation Instruction, 20 hrs. / NAFI (1990)
- OSHA
 - HAZWOPER 8-Hour Refresher (29 CFR 1910.120), 8 hrs. / Compliance Solutions (2014);
 - HAZWOPER 8-Hour Refresher (29 CFR 1910.120), 8 hrs. / Compliance Solutions (2009);
 - HAZWOPER 8-Hour Refresher (29 CFR 1910.120), 8 hrs.
 - HAZWOPER Annual Refresher Training, 8 hrs. / National Environmental Trainers (2006)
 - HAZWOPER Supervisory Training, 8hrs. / National Environmental Trainers (2004)
 - OSHA Hazardous Waste Operations and Emergency Response
 - HAZWOPER (29 CFR 1910.120), 40 hrs. / National Environmental Trainers (2003)
- National Fire Academy:
 - Water-Based Fire Protection Systems (SQ-137), 4 hrs. (2010)
 - Fire Dynamics Analysis & Fire Modeling, 80 hrs. (2008)
 - Basic Concepts of Wildland Fire (S-190), 4 hrs. (2008)
 - Principles of Wildland Fire Behavior (S-190), 8 hrs. (2008)
 - Incident Command System (ICS-100 & ICS-200), 8 hrs. (2008)
- Specialized Training:
 - Aerial Lift Operator Training & Certification, 4 hrs. (2008);
 - Forklift Operator Training & Certification, 4 hrs. (2008)
- University of New Haven
 - Dynamics of Structural Fires, 40 hrs. (1999)
 - Network Security, 40 hrs. (1999)
 - The Investigation of Death Cases, 40 hrs. (1998)
- Houston Community College
 - Fire Prevention and Protection, 40 hrs. (1994)

- Introduction to Occupational Health & Safety, 40 hrs. (1993)
- Introduction to Industrial Hygiene, 40 hrs. (1993)
- Texas A&M University
 - Fire & Arson Investigation Seminar, 40 hrs. (1992)
 - Advanced Accident Investigation, 80 hrs. (1992)
 - Vehicle Accident Reconstruction, 80 hrs. (1992)
 - Fire & Arson Investigation Seminar, 40 hrs. (1989)
 - Fire & Arson Investigation Seminar, 40 hrs. (1988)
 - Fire Cause Detection and Arson Investigation Course, 90 hrs. (1983)
- Association of Accident Reconstruction Specialists
 - Low Speed Collision Dynamics, 8 hrs. (1992)
 - Personal Injury and Fraud, 8 hrs. (1992)
 - Personal Injury & Insurance Fraud, 8 hrs. (1991)
- National Fire Academy – University of Cincinnati
 - Fire Determination Strategies, 40 hrs. (1991)
 - Incendiary Fire Analysis, 40 hrs. (1990)
 - Fire Dynamics, 40 hrs. (1990)
 - Fire Related Human Behavior, 40 hrs. (1990)
 - Applications of Fire Research, 40hrs. (1990)
- Eastern Kentucky University
 - Determining the Cause & Origin of Fires, 20 hrs. (1989)
 - Fire Investigator Instructor Certification Program, 16 hrs. (1989)
 - Determining the Cause & Origin of Fires, 20 hrs. (1988)
- International Association of Arson Investigators
 - Understanding “Undetermined” as a Classification of Fire Cause, 3 hrs. (2018)
 - What the Insurance Professional Needs to Know About Fire Investigation, 3 hrs. (2017)
 - Thermometry, Heat, and Heat Transfer, 3 hrs. (2017)
 - The Engine and the Ignition, Electrical and Fuel Systems, 3 hrs. (2017)
 - Motor Vehicles: Transmission, Exhaust, Brake, and Accessory Systems, 3 hrs. (2017)
 - Fire Chemistry, 3 hrs. (2017);
 - Discovery in Criminal Cases, 3 hrs. (2017)
 - Discovery in Civil Cases, 3 hrs. (2017)
 - Forensic Fire Death Investigations, 40 hrs. (2016)
 - Legal Aspect of Investigating Youth-Set Fires, 3 hrs. (2016)
 - Introduction to Youth-Set Fires, 3 hrs. (2016)
 - Fire Dynamics, 15 hrs. (2015)
 - Accreditation, Certification, and Certificates, 3 hrs. (2015)
 - Advanced Principles of Fire Dynamics, 24 hrs. (2015)
 - Advanced Interviewing & Interrogation, 16 hrs. (2015)

- Investigating Natural Gas Systems, 3 hrs. (2015)
- Residential Natural Gas Systems, 3 hrs. (2015)
- Format, Content, and Preparation for Deposition Testimony, 3 hrs. (2015)
- Questioning Tactics and Effective Responses for Deposition Testimony, 3 hrs. (2015)
- Basic Electricity Tool, 4 hrs. (2014)
- NFPA 921 and NFPA 1033 2014 Editions: Important Revisions, 3 hrs. (2014)
- Documenting the Event, 4 hrs. (2013); Ethics and Social Media, 3 hrs. (2013)
- How First Responders Impact Fire Scenes, 4 hrs. (2012)
- Managing Complex Fire Scene Investigations, 4 hrs. (2012)
- NFPA 1033 and your Career, 3 hrs. (2012)
- Using Resources to Validate your Hypothesis, 2 hrs. (2012)
- Vacant and Abandoned Buildings: Hazards and Solutions, 4 hrs. (2012)
- Writing the Initial Origin and Cause Report, 3 hrs. (2012)
- Ethics and the Fire Investigator - 3 hrs. (2012)
- NFPA 1033 and NFPA 921, 2hrs (2012)
- Fire Investigator Scene Safety, 3 hrs. (2012)
- The Potential Value of Electronic Evidence in Fire Investigations, 4 hrs. (2011)
- Charleston Sofa Superstore Fire, 4 hrs. (2011)
- Fire Protection Systems, 3 hrs. (2011);
- DNA – An Investigative Tool, 3 hrs. (2011)
- Search and Seizure, 4 hrs. (2011)
- Fundamentals of Building Construction, 3 hrs. (2011)
- Explosion Dynamics, 4 hrs. (2010)
- Fundamentals of Building Construction, 3 hrs. (2010)
- Fire Dynamics and Modeling, 4 hrs. (2010)
- Wildland Fires Investigation, 5 hrs. (2010)
- Electrical Safety, 3 hrs. (2010)
- Fundamentals of Interviewing, 4 hrs. (2010)
- Fundamentals of Residential Building Construction, 4 hrs. (2010)
- Examination of Evidence in the Laboratory, 4 hrs. (2010)
- Preparation for the Marine Fire Scene, 4 hrs. (2009)
- Investigation of Marine/Vessel Fires, 16 hrs. (2009)
- Arc Mapping & Fire Investigation, 4 hrs. (2009)
- The Scientific Method for Fire and Explosion Investigation, 3 hrs. (2009)
- Impact of Ventilation, Building Structures & Systems on Fire Development, 4 hrs. (2008)
- Managing Complex Scene Investigations, 4 hrs. (2008)
- Fatal Fire Investigation, 4 hrs. (2008)
- Understanding Fire Through Candle Experiments, 4 hrs. (2008)
- Interviewing & Interrogation, 4 hrs. (2008)
- Cognitive Interviewing, 4 hrs. (2008)

- Ethics & Fire Investigation, 4 hrs. (2008)
- Thermal Residency in Woody Debris Piles, 2 hrs. (2008)
- Constructing Valid Test Questions & Examinations, 2 hrs. (2008)
- Analysis of Fire Scenes Using Fire Dynamics Equations, 4 hrs. (2008)
- Electrical Investigations and Arc Mapping, 4 hrs. (2008)
- LPG Gas Explosions, 4 hrs. (2008)
- Myths & Misconceptions in Fire Investigations, 2hrs. (2008)
- Fire Scene Testing & Safety Guidelines, 2hrs. (2008)
- Thermal Damage Related to Fire Victims, 2 hrs. (2008)
- Forensic Digital Photography, 4 hrs. (2008)
- Motive, Means, and Opportunity: Determining Responsibility in Arson, 4 hrs. (2009)
- Post Flashover Fires, 4 hrs. (2008)
- Critical Thinking Solves Cases, 4 hrs. (2007)
- Forensic Fire Scene Reconstruction, 16 hrs. (2007)
- Introduction to Evidence, 4 hrs. (2007)
- Fire Dynamics Calculations, 4 hrs. (2007)
- Effects of Ventilation on Fire Investigations, 8 hrs. (2007)
- Spontaneous Combustion, 4 hrs. (2007)
- LPG Explosion Investigations, 4 hrs. (2007)
- Dynamics of Fire Starting Behavior, 8 hrs. (2007)
- Forensic Interviewing & Interrogation, 16 hrs. (2007)
- Advanced Fire Models & Fire Dynamics, 4 hrs. (2007)
- Fire Reconstructions using Fire Dynamics Simulator, 4 hrs. (2007)
- Advanced Legal Aspects of Arson, 8 hrs. (2007)
- Insurance and the Fire Investigation, 4 hrs. (2006)
- Investigating Motor Vehicle Fires, 4 hrs. (2006)
- Fire Investigator Scene Safety, 3 hrs. (2006)
- Flammable Gas Explosions from an Engineering Perspective, 2 hrs. (2006)
- Ethics for Fire Investigators, 4 hrs. (2006)
- Flashover and Irregular Burn Patterns, 2 hrs. (2006)
- Fire Investigation – A View from the Bench, 4 hrs. (2006)
- Reid Technique of Interviewing and Interrogation Perspective, 8 hrs. (2006)
- Fire Scene Reconstruction and Electrical Systems, 2 hrs. (2006)
- Lightning as a Fire Cause, 2 hrs. (2006)
- Evidence Examination, Notification & Spoliation, 2 hrs. (2006)
- Texas Death Penalty Case Study, 4 hrs. (2006)
- Examination and Testing, 2 hrs. (2006)
- An Analysis of the Station Nightclub Fire, 4 hrs. (2006)
- Investigation of Electrical & Appliance Related Fires, 24 hrs. (2005)
- The Scientific Method for Fire and Explosion Investigation, 3 hrs. (2005)

- Digital Photography for Fire Investigators, 4 hrs. (2005)
- Magnetek: A Case Study in The Daubert Challenge, 2 hrs. (2005)
- Fire Dynamics and Modeling, 4 hrs. (2005)
- Ethics & the Fire Investigator, 3 hrs. (2005)
- Electrical Fire Investigations, 24 hrs. / Louisiana Chapter IAAI (2003)
- Fire Investigation and Live Burns, 20 hrs. (1994)
- Fire & Arson Investigation Course, 40 hrs. / IAAI 38 th. Annual Conference (1987)
- Fire & Arson Investigation Course, 40 hrs. / IAAI 37 th. Annual Conference (1986)
- Fire & Arson Investigation Course, 40 hrs. / IAAI 36th Annual Conference (1985)
- Fire & Arson Investigation Course 35 th. Annual Conference, 40 hrs. (1984)
- Other:
 - NICET Levels (I – IV) Fire Detection & Alarm Systems 120 hrs. (2008)
 - Post- Bomb Blast Investigation, Heliflight Systems, 16 hrs. /National Center for Forensic Science (2009)
 - DOT Hazardous Materials Transportation, 6 hrs. / Compliance Solutions (2008)
 - New Environment Inc. (2008)
 - Fire Dynamics Simulation
 - Computer Fire Modeling using FDS, 40 hrs. / Seneca College, Ontario, Canada (2006)
 - Confined Space Entry (29 CFR 1910-146), 8 hrs. / Compliance Solutions (2006)
 - Explosion Suppression Systems, 8 hrs. Fenwal Safety Systems (1991)
 - Computer Forensics Examiner’s Certification Training, 40 hrs. Computer Forensics (2001)
 - A+, I-Net+, Network+, 2000 Pro Certification / Microsoft Corp.
 - Fraud Symposium, 40 hrs. / National Association of Certified Fraud Examiners (1992)
 - Firefighter Recruit Training, 40 hrs. / North Harris College (1988)
 - Annual Arson School – Live Burns, 40 hrs. / Ohio University (1985)
 - Law Enforcement Training & Education, 40 hrs. / Kilgore College (1977)
 - Law Enforcement Operations, 40 hrs. / Texas A & I University (1976)
 - Law Enforcement Education & Training, 40 hrs. / East Texas University (1976)
 - Law Enforcement Instructor Certification, 40 hrs. /Harris Co Sheriff’s Academy (1974)
 - Intermediate Certification of Peace Officers (1974)
 - Basic Certification for Peace Officers / TCLEOSE (1972)
 - Driver’s Licensing In-Service Training, 40 hrs. / Texas Dept. of Public Safety (1971)
 - Identification and Evaluation of Medical Limitations of Driving, 40 hrs. / Texas DPS (1971)
 - Law Enforcement Training Academy, 576 hrs. / Texas DPS – Training Academy (1971)
 - Electrical, Electronics & Communications Systems, 960 hrs./U.S. Army Signal Corps (1968)

Publications

- “Fire Dynamics Analysis and Fire Investigation.” *The Informer*, Florida Chapter IAAI, IAAI, Vol. 2, Issue 2, July 2007
- “Some Perspectives on Fire Modeling by a Fire Investigator.” *Fire and Arson Investigator Magazine*, June 1995

Seminars/Presentations

- “Fire Dynamics Analysis & Modeling – A Milestone in the Evolution of Fire Investigation or Smoke and Mirrors?” March 2016
- “Computer Fire & Explosion Modeling as an Investigative Tool.” July 2015
- “Fire Dynamics Analysis and Computer Modeling.” June 2013
- “Expert Consulting Practices in Litigation.” July 2012
- “Investigation and Analysis of Structural Fires.” April 2011
- “Vehicle Fire Investigation & Analysis.” March 2010
- “Structural Fire Analysis.” Sept. 2007
- “Computer Fire Modeling & Fire Investigation/Reconstruction.” Nov. 2006
- “Identifying and Classifying Arson.” April 2006
- “Vehicle Fire Analysis.” Nov. 2005
- “Ethics & the Professional Investigator.” May 2004
- “Fire Origin & Cause Analysis.” Sept. 2003
- “Evaluating Fire & Arson Investigative Files.” Sept. 2003



Rimkus Consulting Group, Inc.
1661 East Camelback Road, Suite 124
Phoenix, Arizona 85016
Telephone: (866) 552-6758

October 7, 2019

Re: RCG File No: 100013778
LLV Number: 3317109
VMF Location: 4949 E. Van Buren Street Phoenix, Arizona
Subject: Preliminary/Final Report

Dear

On August 30, 2019, a fire occurred involving a 1993 Grumman, LLV 3317109. At the time of the fire, the vehicle was located at 17271 North 87th Avenue in Peoria, Arizona.

On September 11, 2019, Rimkus Consulting Group, Inc. was retained to examine the events that led up to the fire involving LLV 3317109. The vehicle had been repaired and returned to service before any physical inspection could take place. The work to complete this assignment was performed by Fire Consultant Thomas D. Kane, IAAI-CFI (V). This report was technically reviewed by Fire Division Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations" and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator."

Conclusions

1. The vehicle had been repaired and returned to service before any physical inspection could take place.
2. The fire originated at the Emergency Flasher Override Switch which was mounted under the dashboard, on the driver's side.

3. The specific ignition sequence was an excessive electrical current being delivered to the affected part, a loose electrical connection to the affected part, a defect within the part, and/or corrosion to the electrical connection from water intrusion.

Observations

Exterior Inspection:

No reported damage.

Interior Inspection:

No reported damage.

Engine Compartment Inspection:

No reported damage to the engine compartment. The vehicle was equipped with a 2.2 liter engine with standard ignition coil.

Undercarriage Inspection:

No reported damage. The vehicle was mounted on a GM frame.

Fuse Panel Inspection:

No reported damage or open fuses.

Area of Fire Origin:

This fire originated at the Emergency Flasher Override Switch which is mounted under the dashboard, on the driver side.

Potential Contributing Factors:

The potential contributing factors include an excessive electrical current being delivered to the affected part, a loose electrical connection to the affected part, a defect within the part, and/or corrosion to the electrical connection from water intrusion.

Evidence Collected:

Emergency Flasher Override Switch. Signs of electrical activity were observed on the plug in connection. The plastic cover for the plug in connection was missing and presumed to have melted away. This component is also referred to as part number 1010 and is manufactured by Jasper.

Interviews:

USPS Carrier:

- This has been his assigned vehicle for 4 years.
- There were no prior fires.
- There were prior electrical problems with this vehicle.
- He was driving at the time of the fire and heard a “pop” sound.
- Smoke was coming from the area of the fuse panel.
- He could smell an “electrical” burning odor.
- There were no flames, only a smoldering fire.
- The fire was put out with a fire extinguisher.
- He was not injured and no mail was damaged.
- The fire department was not called.

USPS Mechanic:

- He has been a USPS mechanic for 4 years.
- He replaced the Emergency Flasher Override Switch.
- He has seen multiple similar failures on other LLV's.
- He believes the problem is caused by water intrusion, overcurrent to the component, and/or a loose connection.
- He recalled this vehicle having turn signal problems prior to this incident.

Service Records:

A review of the service records for this vehicle showed a history of electrical problems beginning on April 1, 2019, and the replacement of the Emergency Flasher Override Switch on July 2, 2019. At that time the driver reported smoke coming from under the steering wheel and a burning odor.

The vehicle had been repaired and placed back into service prior to this inspection. Interviews were conducted with the driver and the mechanic.

The affected Emergency Flasher Override Switch was provided by the Phoenix Vehicle Maintenance Facility and was retained for any further evaluation.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Thomas D. Kane

Thomas D. Kane, IAAI-CFI (V)
Fire Consultant

David R. Meyers

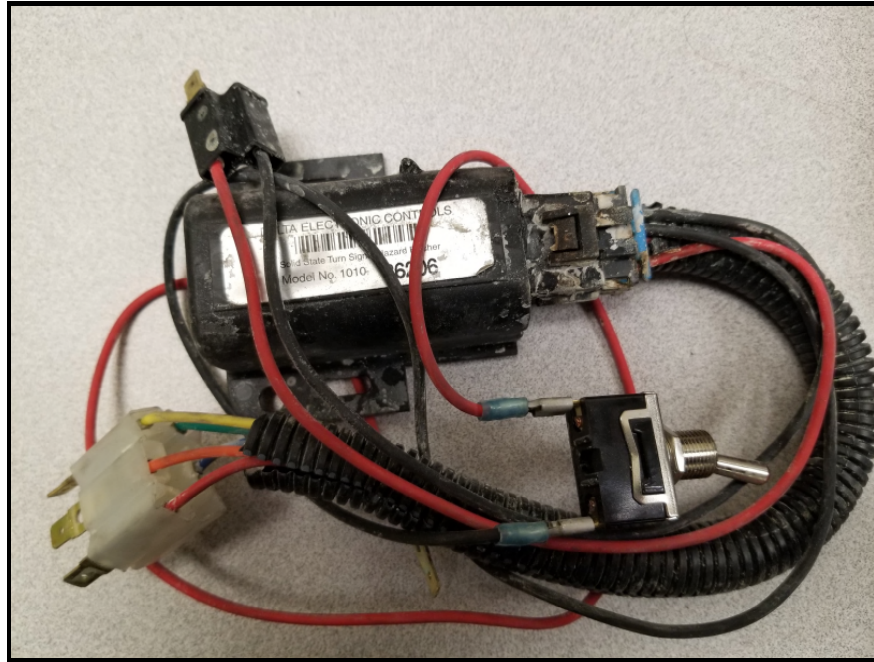
David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

October 7, 2019
Rinkus File No. 100013778

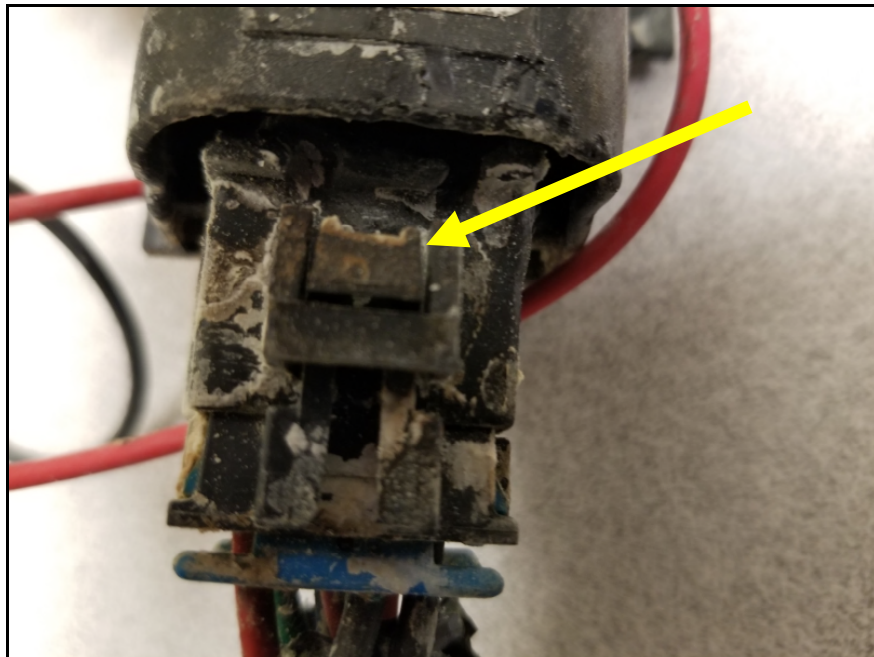
Photograph 1

Affected Emergency Flasher Override Switch recovered from Phoenix VMF.



Photograph 2

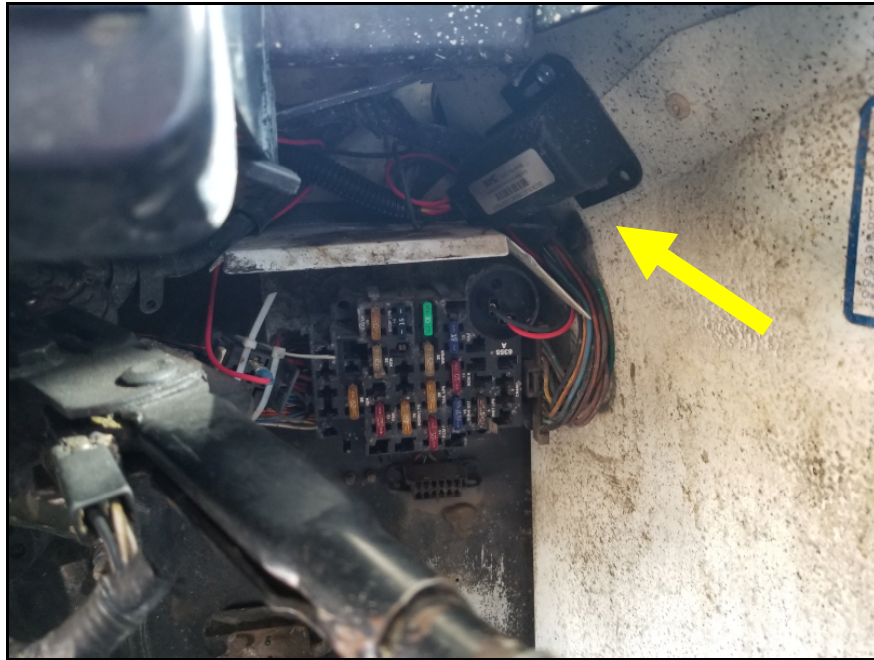
Electrical activity on connection.



October 7, 2019
Rimkus File No. 100013778

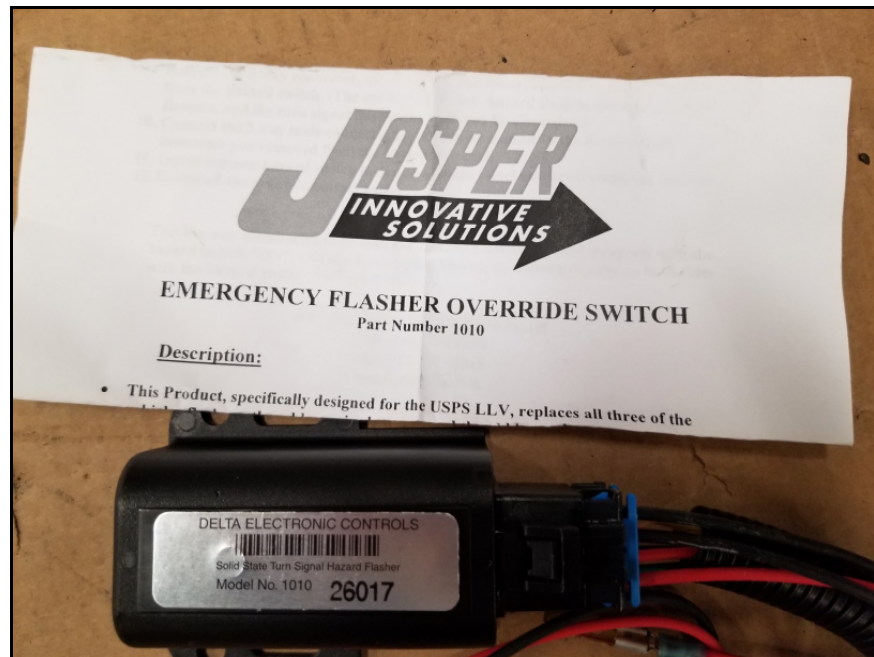
Photograph 3

Unit installed in exemplar vehicle.



Photograph 4

New unit, in-stock part.



October 7, 2019
Rimkus File No. 100013778

Photograph 5
Dashboard area.

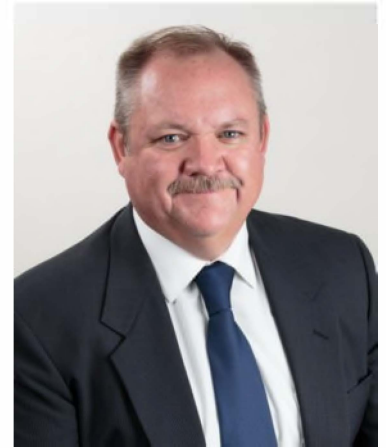


Photograph 6
The vehicle.



October 7, 2019
Rimkus File No. 100013778

Curriculum Vitae



Thomas D. Kane, CFI, CFI(V)

Fire Consultant
Fire Division

Background

Mr. Kane is a police officer with a B.S. in Criminal Justice, a licensed private investigator, a former licensed construction contractor, and a Certified Fire Investigator specializing in fire origin and cause investigation, and consultation.

Of his over 30 years of experience in law enforcement, he has spent half of that career as an arson detective, determining the cause and origin of over 1,000 fires in commercial and residential structures, recreational vehicles, automobiles, marine vessels, heavy equipment and wild lands.

Mr. Kane has been recognized as an expert witness in both criminal and civil court, in the fields of fire cause and origin, building construction, criminal investigations, firearms, transient criminal groups, and issues relating to building safety and security.

Contact Information

(602) 216-2200

tkane@rimkus.com

1661 East Camelback Road,
Suite 124
Phoenix, AZ 85016

Professional Engagements

- Fire and Law Enforcement
 - Police Officer – Scottsdale, AZ (1993-present), Served as a uniformed patrol officer, property crimes detective and patrol supervisor. Lead arson investigator with Scottsdale Police Dept. investigating arson incidents in Scottsdale and surrounding communities.
 - Police Officer – New York City and Suffolk County Police Departments (1989-1993), Duties included providing uniformed support for detectives and conducting saturation patrols in areas of illegal drug activity.

Forensic Engagements

- Fire/Explosion Investigations
 - Apple Computer Manufacturing Facility Large Loss Fire – Mesa, AZ (2013), Investigated origin and cause of fire in a manufacturing facility.
 - Criminal Case: State of Arizona v. Marin – Phoenix, AZ (2012), Served as fire investigation origin and cause expert for Maricopa County Attorney's Office.
 - Wahweap Marina Large Loss Fire – Page, AZ (2010), Investigated fire cause and origin involving ten houseboats.
 - Criminal Case: State of Arizona v. Miller – Scottsdale, AZ (2004), Served as fire investigation origin and cause expert for Maricopa County Attorney's Office.

Professional Experience

- Rimkus Consulting Group, Inc. 2013 – Present
 - Fire Consultant – Western Region
Conducts fire and explosions cause and origin investigations. Analyze and perform on scene investigations for fires and building life safety issues, as well as hazardous material concerns. Investigated and responded to over 1,000 fires and explosions during career as a fire investigator. This list includes numerous large loss fires and several high-profile criminal cases as an expert for the prosecution.
- Scottsdale Police Dept., City of Scottsdale 1993 – Present
 - Patrol Officer – Uniformed Services Bureau
Began service with the department as a police officer in 1993, promoted to detective in 1996, assigned to the Property Crimes Unit investigating residential and commercial burglaries, fraud, art theft, gypsy crimes, and arson.
- Fire Cause Analysis 2008 – 2013
 - Fire Consultant
Conducted fire and explosions cause and origin investigations for insurance and legal clients. Analyzed and performed on-scene investigations for fires and building life safety issues, as well as hazardous material concerns.
- Jerry James and Associates 2006 – 2008

- Fire Consultant
Conducted fire and explosions cause and origin investigations for insurance industry. Focused on fires and building life safety issues, as well as hazardous material concerns.

- Crawford Investigative Services 2004 – 2006
 - Fire Consultant
Conducts fire and explosions cause and origin investigations. Analyze and perform on scene investigations for fires and building life safety issues, as well as hazardous material concerns.

- Suffolk County Police Department 1989 – 1993
 - Police Officer – Patrol Bureau
Responsible for responding to emergency and non-emergency calls for service within a designated area of responsibility.

- New York City Police Department 1989 – 1993
 - Police Officer – Patrol Division, Tactical Narcotics Team, Manhattan North Patrol Bureau
Duties included providing uniformed support for detectives and conducting saturation patrols in areas of illegal drug activity.

Education and Certifications

- Criminal Justice, B.S.: State University of New York, Buffalo (1987)
- New York City Police Officer Certification: NYPD Police Academy (1988)
- New York State Police Officer Certification: Suffolk County Police Academy (1989)
- Arizona Police Officer certification: Phoenix Regional Police Academy (1993)
- Certified Fire Investigator: International Association of Arson Investigators, #28-036 (2004)
- Certified Fire Investigator, Vehicle Endorsement: International Association of Arson Investigators (2018)
- Maricopa County Fire Investigation Task Force: Maricopa County, AZ
- FBI Joint Terrorism Task Force on Arson: Federal Bureau of Investigation (formed to apprehend the Phoenix Mountain Preserve Arsonist)
- Licensed Construction Contractor (former): Arizona Registrar of Contractors
- Licensed Private Investigator: Arizona, New Mexico

Continuing Education

- International Association of Arson Investigators: 1,000 hours of classroom and practical instruction including: interviews and interrogations; covert surveillance technology; fire science; fire behavior; fire chemistry; hazardous materials; flammable liquids, fire origin and cause determination; electrical fire investigation; explosion scene investigation; and evidence collection and preservation.



Rimkus Consulting Group, Inc.
1752 W 1180 Street Suite 8
Woods Cross, Utah 84087
(855) 249-6568 Telephone
(385) 202-2633 Facsimile

March 26, 2019

Re: RCG File No: 76400782
LLV Number: 3317209
VMF Location: 10108 S. Redwood Road South Jordan, Utah
Subject: Preliminary/Final Report

A fire occurred in LLV 3317209 on February 11, 2019. This fire occurred at 1077 S 800 West in Salt Lake City, Utah while being driven by the carrier, Ms. Alicia Chadwick. The LLV was inspected at the Salt Lake City VMF I. The vehicle, make and model was a 1993, 1/2T Grumman LLV 2.5/L4 RH.

Rimkus Consulting Group, Inc. was retained to examine LLV 3317209, VIN 1GBCS10A8P2915140. The vehicle examination was conducted by Fire Consultant Dean Hunt, NAFI-CFEI and the report was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the steering column of the involved LLV.
2. The specific area of fire origin was determined to be at the turn signal assembly.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of the adverse electrical event within the electrical wiring connector portion of the turn signal assembly.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. There was no fire damage to the exterior portions of the vehicle. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and undamaged.

Interior Inspection:

The steering column was damaged from fire between the steering wheel and the ignition switch, at the turn signal. There was no other damage from the fire to the interior of the LLV. The turn signal lever was missing from the steering column. This was found on the tray that was to the left of the driver's seat.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment was observed with no fire damage. No evidence was observed of the fire originating within the brakes, wheel hubs or tires in the area of the engine compartment.

The battery for the vehicle was located at the front driver's side of the engine compartment. The battery, battery terminals, and battery cables were examined and found to be undamaged and intact; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range.

Undercarriage Inspection:

No fire damage was observed to the underside of the vehicle. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust

system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head. All four tires were intact.

Fuse Panel Inspection:

There was a 20 Amp fuse inserted in a slot that was marked for a 15 Amp fuse. The fuse slot is marked "Turn B/U". This 20 Amp fuse had been blown (open). All other fuses were of appropriate amperage and were still closed.

Area of Fire Origin:

The area of fire origin was in the steering column at the swivel point of the steering wheel and the turn signal.

Potential Contributing Factors:

An adverse electrical event within the steering column and an oversized fuse were contributing factors to the cause of the fire within the steering column.

Evidence Collected:

The steering column, turn signal lever and the emergency brake handle assembly were taken as evidence.

Interview:

Documentation provided to us indicated a USPS employee, was operating the vehicle on Sunday, February 11, 2019, at 1077 S 800 West in Salt Lake City, Utah. Ms. was operating the vehicle when she observed smoke coming from beneath the steering column. She pulled over and opened the door to the vehicle. When she started to get out she observed fire in the area of the steering column near the turn signal switch. She then called 911 to report the fire. Ms. was unavailable to be interviewed before issuance of our report.

Service Records:

The maintenance records indicate that the turn signal spring had been replaced three times since July 2018, most recently replaced on February 11, 2019.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to

us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Dean B. Hunt

Dean B. Hunt, NAFI - CFEI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

March 26, 2019
RCG File No. 76400782

Photograph 1
Exterior of LLV 3317209.

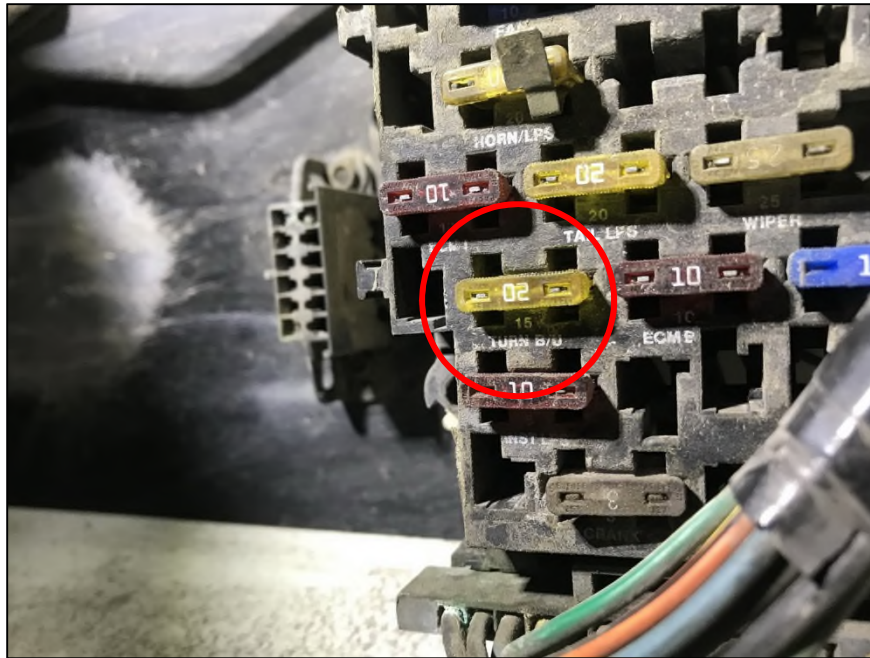


Photograph 2
Steering column at swivel point and turn signal.

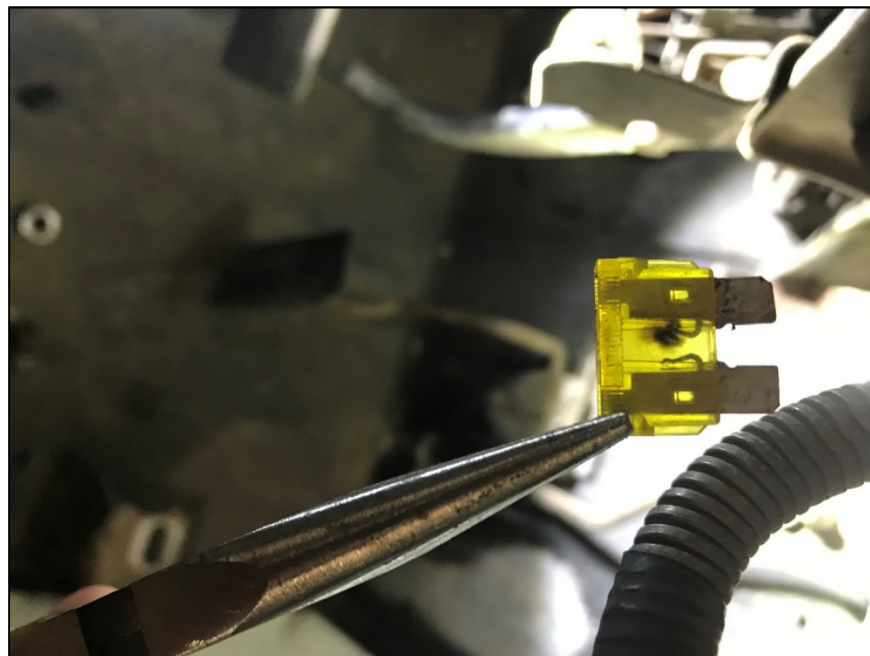


March 26, 2019
RCG File No. 76400782

Photograph 3
Fuse panel.



Photograph 4
Blown 20A fuse.



March 26, 2019
RCG File No. 76400782

Photograph 5
Engine Compartment.



Photograph 6
Steering Column.



March 26, 2019
RCG File No. 76400782

Curriculum Vitae



DEAN B. HUNT C.F.E.I. FIRE CONSULTANT

Mr. Hunt is a graduate from Grand Canyon University with a Bachelor of Science degree in Public Safety and Emergency Management. His experience and knowledge covers over 30 years in the fire service with the last 19 years working as a full time Fire Investigator and Fire Marshal. He is a Certified Fire and Explosion Investigator (C.F.E.I.) through the National Association of Fire Investigators as well as a Certified Fire Inspector II with the International Code Council (ICC). Mr. Hunt is experienced in the interpretation and enforcement of the International Building Code and the International Fire Code as it relates to fire, life safety and egress in existing buildings and new construction as well as with fire protection systems.

In addition to over 600 fire investigations, Mr. Hunt has conducted over 200 live fire training tests utilizing modern furnishings and materials. These tests were conducted for the purpose of studying the effects of varying structural and atmospheric conditions as well as the effects of fire protection systems. This has helped him to gain a better understanding of how these varying conditions affect the growth and progression of fire as well as the patterns that are left behind after a fire has been extinguished.

Mr. Hunt has extensive experience in public speaking as well as presenting at both national and local conferences including the National Fire Protection Association (NFPA) Conferences and Vision 20/20 Symposium of Model Programs of Fire Prevention. He has also been recognized for his Fire Prevention Programs in National Fire Academy publications and courses as a 'model program' in Fire Prevention.

Mr. Hunt has been involved in photography both as a hobby and professionally for 40+ years. This experience has given him experience with both modern and past photography equipment and techniques.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. Public Safety and Emergency Management – Grand Canyon University, Phoenix Arizona
Certified Fire and Explosion Investigator – National Association of Fire Investigators (NAFI)
Certified Fire Inspector II – International Code Council (ICC)
International Association of Arson Investigators, Utah Chapter – Member
National Association of Fire Investigators – Member
International Association Fire Chiefs – Member
International Fire Marshals Association – Member
Utah Fire Chiefs Association – Member
Fire Marshals Association of Utah – Member

EMPLOYMENT HISTORY

2016 – Present	Rimkus Consulting Group, Inc.
1997 – 2016	Layton City Fire Department
1994 – 1997	Utah Office of the State Fire Marshal
1989 – 1994	Utah Bureau of Emergency Medical Services



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
6990 Columbia Gateway Drive, Suite 110
Columbia, MD 21046
(877) 872-2999 Telephone
(410) 872-9111 Facsimile

May 2, 2017

Re: RCG File No:

47508848
LLV Number: 3317244
VMF Location: 22363 Randolph Drive in Sterling, Virginia
Subject: Preliminary/Final Report

Dear

On April 11, 2017, a fire occurred in a US Postal Service vehicle at 5211 Koughton Way in Centreville, Virginia. On April 13, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1994 Chevrolet LLV 3317244 with a vehicle identification number (VIN) of 1GBCS1044R2911549. On April 18, 2017, we conducted a fire origin and cause examination on the vehicle at a US Postal Service Maintenance Facility located at 22363 Randolph Drive in Sterling, Virginia.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Charles W. Feeley, IAAI-CFI. A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the vehicle.
2. The specific area of origin was determined to be on the left side of the engine.

3. The point of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
5. We could not eliminate the possibility of an engine fluid leak (i.e.: fuel, oil, transmission fluid) onto a hot engine surface as the possible cause of the fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed in the engine compartment, cargo area, and the mail compartment. Total mass loss was observed to the windshield, engine hood assembly, dashboard and multiple engine components. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size and manufacturer which were Goodyear LT 195/75 R15. There was no evidence to indicate that the brakes, wheel assemblies, or axles had failed. The fuel cap was in place and secured.

The front of the vehicle had sustained severe fire damage. The cover for the engine compartment had been consumed by the fire. The bulkhead between the engine compartment and the mail compartment had also been consumed. Severe fire damage was observed to the left, mail side of the vehicle. The left front fender had been consumed. The left side mail door and aluminum frame had partially melted. Severe fire damage was also observed to the cargo area. The rear rolling door had sustained severe fire and heat damage. The right, driver's side sustained fire and heat damage to the driver's door in the area of the window. The right front fender sustained fire and heat damage to the upper portion. The entire aluminum roof of the vehicle had melted as the result of thermal exposure from the fire. The aluminum side walls had failed and were observed pushed outward due to severe heat and fire damage on the interior of the vehicle.

The exhaust system was observed with thermal damage only. The rear wheels, brakes, brake lines, and tires were observed with thermal fire damage only. The right front tire, wheel, brake, and brake line had sustained minor fire damage. The left tire sustained minor fire damage. The brakes, brake lines, and wheels were observed with external

thermal damage only. The rear axle was not leaking or damaged. The transmission was undamaged. The fuel lines were intact along the left open frame. The flexible fuel lines at the cross over to the right side above the transmission were observed with severe fire damage and mass loss.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage throughout. All combustible seating material had been consumed, exposing the metal seat frame. The steering column and brake pedal assembly had been severely fire damaged. The mail tray had collapsed and partially melted. Numerous packages of paper products remained with charring around the edges. The rear cargo area sustained fire, heat and smoke damage throughout. The left side panel sustained severe fire and heat damage. The front bulkhead had been consumed. The fuse block located on the right side of the driver's compartment had fallen into the engine compartment and was too severely damaged by the fire to be evaluated. There was no evidence of adverse electrical activity to the circuits that were observed. The ignition was too severely damaged to be evaluated. The heater fan was not present in the debris and coil was found on the ground beneath the front left tire. The wiring harness was examined and no evidence of adverse electrical activity was observed.

The most severe fire damage was observed at the bulkhead, dashboard, windshield, and steering column. The burn patterns observed to the interior area progressed upward and outward from the engine compartment. After a review of the progression of the burn patterns, it was determined the fire progressed from the engine compartment into the mail compartment through the manufactured holes in the bulkhead and due to the failure of the windshield.

Engine Compartment Inspection:

Examination of the engine compartment revealed severe fire damage throughout the compartment. The vehicle was equipped with a GM 2.2L, four-cylinder gasoline engine. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the engine compartment. The engine compartment sustained fire, heat, and smoke damage throughout. The damage was most severe on the left side of the engine compartment. The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been partially consumed. The melted remains of the fuse box from the mail compartment and the attached wiring harness were inspected. The wiring harness sustained fire and heat damage. The insulation had been consumed. The alternator sustained severe fire and heat damage. The insulation had been consumed from the conductors to the alternator. The main conductor was secure with no evidence of adverse electrical activity. The auxiliary conductor was secure. The top of the battery case had sustained fire and heat damage.

The conductors and terminals had become detached from the battery. The negative conductor was attached to the frame and to the block. The main positive conductor was attached to the starter. The insulation had been consumed but displayed no evidence of adverse electrical activity. The fuel rail was intact, however had sustained severe fire damage. The injectors sustained heat damage but were intact. The fuel lines had sustained severe fire damage however were intact. The power steering unit positioned at the left front of the engine sustained fire damage. The flexible return line and reservoir had been consumed. The upper radiator hose sustained fire and heat damage. The flexible section of the vapor return line from the fuel tank to the canister mounted in the grill had been consumed. The canister had sustained fire and heat damage. The flexible section from the canister to the solenoid at the rear of the throttle body had been consumed. The starter was undamaged by the fire and the conductors were secure. The insulation had been consumed on the conductors routed across the engine from the battery to the starter.

Undercarriage Inspection:

Examination of the rear undercarriage revealed no evidence of soot, smoke, heat, or fire damage. There was an accumulation of oil residue on the rear axle. The undercarriage in the area of the engine sustained no fire or heat damage. There was an accumulation of oil residue present. The involved LLV was mounted on a GM frame. The fuel lines were positioned within the open frame routed to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. The fuel lines were routed above the transmission to the right side of the engine. The rubber sections of the fuel lines at the transmission were intact. The top of the transmission sustained severe fire damage from the engine compartment.

Fuse Panel Inspection:

The fuse panel of the mail compartment had fallen into the engine compartment and was observed with severe fire damage. Examination of the fuse panel revealed severe fire damage and mass loss to the panel and all of the fuses, due to the severe fire damage and mass loss we were not able to determine if any were fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated within the engine compartment of the vehicle. The area of origin was determined to be on the left side of the engine. The specific point of origin could not be conclusively identified due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination. We could not eliminate the possibility of an engine fluid leak (i.e.: fuel, oil, transmission fluid) onto a hot engine surface as the possible cause of the fire.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Service Records:

A review of the service records provided for the involved LLV did not reveal any recent repairs or work that would have caused or contributed to the cause of the fire. There was, however, a repair involving the horn contact and lead wire on March 17, 2017 and the addition of one quart of transmission fluid in December 2016. The last preventative maintenance was performed on October 17, 2016.

Interviews:

On April 20, 2017 we interviewed the carrier and he provided the following information:

- He does not drive the involved vehicle every day.
- He started his route at approximately 11:30 A.M. or noon.
- The fire occurred approximately between 1:15 P.M. and 1:30 P.M.
- He had no problems with the vehicle prior to the fire.
- The vehicle was operating properly when he stopped at a curbside box to deliver mail.
- When he stopped, he noticed smoke coming from under the hood at the windshield.
- The brown smoke was coming from the center.
- He turned off the ignition and exited the vehicle.
- The vehicle became engulfed in seconds.

- The fire department arrived approximately 3-4 minutes later.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles W. Feeley

Charles W. Feeley, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers
Technical Fire Manager

Attachments: Photographs, CVs

May 2, 2017
RCG File No. 47508848

Photograph 1

A view of the exterior front of the vehicle.



Photograph 2

A view of the left side of the involved vehicle.



May 2, 2017
RCG File No. 47508848

Photograph 3

A view of the rear of the involved vehicle.



Photograph 4

A view of the right side of the vehicle.



May 2, 2017
RCG File No. 47508848

Photograph 5

A view of the driver's compartment.



Photograph 6

A view of the rear cargo area.



May 2, 2017
RCG File No. 47508848

Photograph 7

A view of the engine compartment.



Photograph 8

A view of the undercarriage.



May 2, 2017
RCG File No. 47508848

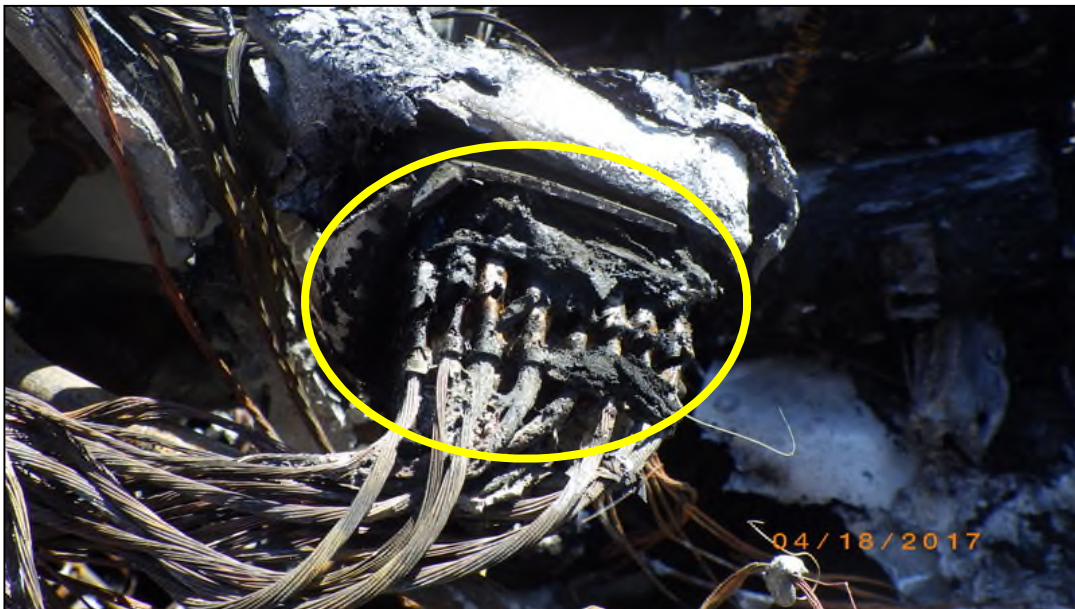
Photograph 9

A view of the dashboard.



Photograph 10

A view of the fuse panel.



May 2, 2017
RCG File No. 47508848

Photograph 11

A view of the area of origin.



May 2, 2017
RCG File No. 47508848

CVs



**CHARLES FEELEY, I.A.A.I., C.F.E.I., C.F.I., P. I.
FIRE CONSULTANT**

Mr. Feeley had been employed by the Baltimore City Fire Department for 35 years. In this capacity he had been involved in many different emergency positions including Fire Fighter, Lieutenant, Captain, Chief Safety Officer, Battalion Commander and Division Chief.

Mr. Feeley has completed numerous educational seminars and continuing educational courses.

Mr. Feeley investigated over 550 fires in four years as an investigator and in excess of 5,000 fires as an incident commander at fire scenes. He has given expert testimony in civil and criminal court cases. He supervised the Office of the Fire Marshal in Baltimore City. He also supervised special projects such as the Arson Task Force, juvenile fire setters program, an educational intervention program and public education programs.

At Rimkus Consulting Group, Mr. Feeley has conducted over 500 fire origin and cause determinations that include, but are not limited to, assignments involving residential, commercial, industrial, passenger and commercial vehicles, marine, farm implement/equipment, appliance and electrical equipment related fires.

Mr. Feeley has been recognized for his achievements by being the recipient of awards that include Distinguished Unit Citation, Meritorious Conduct Award, Exemplary Performance, and Distinguished Service Award.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

National Fire Academy
National Nuclear Security Administration
United States Department of Justice, New Mexico Tech.
Department of Homeland Security
National Association of Fire Arson Investigators
United States Department of Justice, Anniston AL.
National Association of Fire Investigators.
Certified Fire and Explosion Investigator, N.A.F.I Certification
Certified Fire Investigator, International Association of Arson Investigators
Licensed as a Private Investigator in the State of Delaware

EMPLOYMENT HISTORY

2006 – Present	Rimkus Consulting Group, Inc.
1970 – 2006	Baltimore City Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
921 Eastwind Drive, Suite 110
Westerville, OH 43081
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

July 10, 2017

Re: RCG File No:

LLV Number: 53602661
VMF Location: 3317401
Subject: 16500 Chagrin Boulevard Cleveland, Ohio
Preliminary/Final Report

Dear

On June 17, 2017, a fire occurred involving a US Postal Service vehicle at 15755 North Ridge Road in Novelty, Ohio while the vehicle was being operated. On June 20, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1994 Chevrolet postal delivery vehicle LLV 3317401, VIN 1GBCS1043R2903572. On June 29, 2017, we conducted a fire origin and cause examination on the vehicle at the VMF located at 16500 Chagrin Boulevard in Cleveland, Ohio.

In the course of our work, we examined the fire damaged LLV, excavated fire debris, checked all fluid levels, reviewed and copied maintenance records, consulted VMF staff, interviewed the postmaster and the driver, documented the vehicle with photos, and reviewed the local fire department report. Our work to complete this assignment was performed by Fire Consultant W. Timothy Spradlin, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated at the top side of the engine within the engine compartment of the involved LLV.

2. The specific point of origin could not be conclusively identified due to the severe fire damage to the area of origin and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire was inconclusive, however, a direct result of ignition of either leaking or atomized engine fluids coming in direct contact with a hot surface within the engine compartment or the ignition of leaking fuel vapors in the area of the fuel injectors could not be eliminated.
4. Based on our observations, it is probable that a mechanical failure of the fuel injectors occurred allowing the leakage of fuel on the top side of the engine. The fuel being ignited by the normal electrical activity within the engine compartment while the engine was running could not be eliminated as a possible ignition source.

Observations

Exterior Inspection:

For the purpose of this report, the left side of the vehicle refers to the mail side and the right side refers to the operator's side. There was severe fire damage to the exterior sides, top, and to the rear of the LLV. The engine hood and components were consumed by the fire. The windows and windshield were dislodged, consumed, or broken by the fire.

The wheels and tires on the rear were intact. The wheels and tires on the front of the vehicle were observed with severe fire damage. There was no evidence to indicate that the LLV had recently been involved in a collision. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

The aluminum cab, hood and engine compartment were severely damaged, melted and collapsed from fire exposure. The fender wells were melted and collapsed. The roof was melted and collapsed. Fire damage patterns indicated the fire extended up from the undercarriage below the engine compartment into the cab and engine compartment.

We began our examination at the front of the vehicle. The front, roof, and mail side of the aluminum body was melted and collapsed. The front mail side fender, the hood, grill and cab "A" posts were consumed by fire. We continued our examination in a clockwise direction. The driver side fender was melted and collapsed. The driver side sliding door was in the open position and deformed by heat. There was a fire V pattern on the door indicating fire had extended from the engine compartment towards the rear of the vehicle. The driver side cargo area wall was intact with all paint consumed by fire. The

rear rolling overhead door was heat damaged and collapsed into the cargo area. The mail side cargo wall was heat damaged and collapsed. The mail side sliding door was consumed by fire and collapsed into the interior.

Interior Inspection:

The interior of the LLV was examined. The rear cargo compartment of the interior was observed with severe fire damage that extended from the front of the vehicle into the cargo area. The front compartment was observed with severe fire damage and with mass loss to the dashboard area. The driver's seat was observed with severe fire damage, oxidation, and mass loss. There was no physical evidence observed on the interior of the LLV that would have caused or contributed to the cause of the fire. Fire damage patterns indicated the fire extended from below the engine compartment into the operators compartment into the rear cargo area.

Engine Compartment Inspection:

Examination of the engine compartment revealed severe fire damage and mass loss throughout the compartment. The vehicle was equipped with a GM 2.2L, 4 cylinder gasoline engine. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the area of the top front of the engine compartment. The engine compartment sustained severe fire, heat and smoke damage throughout. The damage was most severe on the top left side of the engine compartment. The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been partially consumed. The melted remains of the fuse box from the passenger compartment and the attached wiring harness were inspected. The wiring harness sustained fire and heat damage. The insulation had been consumed. The alternator sustained severe fire and heat damage. The insulation had been consumed from the conductors to the alternator. The main conductor was secure with no evidence of adverse electrical activity. The auxiliary conductor was secure.

The top of the battery case had sustained severe fire and heat damage. The conductors and terminals had become detached from the battery. The negative conductor was attached to the frame and to the block. The main positive conductor was attached to the starter. The insulation had been consumed but displayed no evidence of adverse electrical activity. The fuel rail was intact, however, had sustained severe fire damage. The injectors sustained severe fire damage and mass loss. The fuel lines had sustained severe fire damage.

The power steering unit positioned at the left front of the engine sustained fire damage. The flexible return line and reservoir had been consumed. The upper radiator hose sustained fire and heat damage. The flexible section of the vapor return line from the

fuel tank to the canister mounted in the grill had been consumed. The canister had sustained fire and heat damage. The flexible section from the canister to the solenoid at the rear of the throttle body had been consumed. The starter was observed with external thermal damage only by the fire, and the conductors were damaged but no adverse electrical activity was observed. The insulation had been consumed on the conductors routed across the engine from the battery to the starter.

All combustible engine components including wire insulation, belts and hoses were consumed by fire. The oil dipstick was checked and the level found to be within normal limits. The transmission dipstick was checked and the level found to be within normal limits. The radiator was severely damaged by heat so the coolant could not be checked. The power steering and brake fluid reservoirs were unable to be examined due to the severe fire damage.

Undercarriage Inspection:

Examination of the rear undercarriage revealed no evidence of soot, smoke, heat or fire damage. The front-end of the undercarriage was observed with severe fire damage. There was an accumulation of oil residue observed throughout the undercarriage area. The undercarriage in the area of the engine sustained severe fire damage. There was an accumulation of oil residue present. The involved LLV was mounted on a GM frame. The fuel lines were positioned within the open frame routed to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. The fuel lines were routed above the transmission to the right side of the engine and observed with severe fire damage. The rubber sections of the fuel lines at the transmission were damaged and observed with mass loss.

Fuse Panel Inspection:

The fuse panel of the passenger compartment had fallen into the engine compartment and was observed with severe fire damage. Examination of the fuse panel revealed severe fire damage and mass loss to the panel and all of the fuses, due to the severe fire damage and mass loss, we were not able to determine if any fuses were blown.

Area of Fire Origin:

Based on examination of the fire damage, it was determined that the area of fire origin was the top area of the engine compartment. The specific point of origin could not be conclusively identified due to the severe fire damage to the area of origin and the lack of remaining physical evidence for examination. The specific ignition sequence and cause of the fire was inconclusive, however, a direct result of ignition of either leaking or atomized engine fluid coming in direct contact with a hot surface of the components in the area of the engine compartment or the ignition of leaking fuel vapors in the area of the fuel injectors could not be eliminated.

Contributing Factors:

We examined the fire damage patterns within the engine compartment. There were heat oxidation patterns and all oil residues were burned away indicating a possible hot surface fire or fuel vapor ignition. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination. We could not eliminate the possibility of an engine fluid leak (IE: fuel, oil, transmission fluid) onto a hot surface or the ignition of fuel vapors leaking in the area of the fuel injectors as the possible cause of the fire. The normal electrical activity within the engine compartment while the engine was running could not be eliminated as a possible ignition source.

Evidence Collected:

No evidence was collected.

Interviews

On June 29, 2017, we conducted an interview with VMF Manager. The vehicle was a GM frame type with a 2.2 liter four-cylinder engine, with fuel injection and a direct ignition system. She provided the maintenance records for the LLV. The records showed the vehicle had routine maintenance on May 22, 2017. A battery cable was replaced on that date. According to Ms. the vehicle was also scheduled to have a new frame installed in the near future. There were no major problems reported within the past year on the vehicle.

On July 6, 2017, we conducted a telephone interview with the carrier who was driving the vehicle when the fire occurred. He stated that on the date of loss, he was driving a rural route. All vehicle systems were operating properly. He stated that after about 2 hours, the vehicle began to sputter and run poorly when accelerating between mailboxes. Mr. stated the vehicle died and he had to restart it. He stated that it continued to sputter and run rough. He stated after he delivered five more mailboxes, the vehicle died again. At this point Mr. stated he smelled smoke and saw light smoke coming into the driver compartment from the engine compartment. He got out of the vehicle and attempted to open the hood. He stated that the hood was opened a few inches but was too hot to touch so he stopped. Mr. stated he saw heavy dark smoke come out of the partially open hood gap and he saw flames inside on the engine. At that point, Mr. stated he moved away from the vehicle and called for help.

Service Records:

A review of the service records provided for the involved LLV was completed. A battery cable was replaced on that date. According to Ms., the vehicle was also scheduled to have a new frame installed in the near future. There were no major problems reported within the past year on the vehicle. Based on this information, maintenance performed on the vehicle does not appear to have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Spradlin

William T. Spradlin, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

July 10, 2017
RCG File No. 53602661

Photograph 1
Front view of LLV.



Photograph 2
Front driver side of LLV.



July 10, 2017
RCG File No. 53602661

Photograph 3

Rear driver side of LLV.



Photograph 4

Rear mail side of LLV.



July 10, 2017
RCG File No. 53602661

Photograph 5
Front mail side of LLV.



Photograph 6
Engine compartment of LLV.



July 10, 2017
RCG File No. 53602661

Photograph 7
Front underbody of LLV.



Photograph 8
Rear underbody of LLV.



July 10, 2017
RCG File No. 53602661

Photograph 9
Driver compartment.



Photograph 10
Top of engine area of fire origin.



July 10, 2017
RCG File No. 53602661

CVs



**WILLIAM TIMOTHY SPRADLIN, IAAI-CFI, CI, FIT, NAFI-CFEI
Fire Consultant**

Mr. Tim Spradlin has over 35 years' experience in firefighting, law enforcement, fire, arson and bombing investigation. His fire / explosion investigation work spans over 20 years of service, and he has three related college degrees. His career includes work as a full-time fire lieutenant, captain, deputy chief and fire chief in Xenia Township, Ohio. Mr. Spradlin also served as a reserve deputy sheriff with the Greene County Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He retired from 32 years public safety work as the Chief of the State of Ohio Fire Marshal's Fire – Explosion Investigation Bureau. From January 2008 until September 2014 Mr. Spradlin was the full-time chief fire / arson investigator for Ohio. He was also the curriculum manager / instructor for the Ohio Fire Academy fire investigation programs.

Mr. Spradlin also served in the United States Air Force, where he served 4 years active duty and 26 years reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant / First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the US Army in 2007 for combat meritorious service.

He currently serves as a police officer in the Village of Yellow Springs and as a volunteer fire training officer with the Xenia Township Fire Department in Ohio. Mr. Spradlin also teaches in the Clark State Community College fire programs and the Sinclair Community College Basic Police Officer Training Academy.

Mr. Spradlin is a certified fire investigator (CFI), fire investigation technician (FIT) and certified instructor (CI) by the International Association of Arson Investigators (IAAI). He is also a certified fire explosion investigator (CFEI) by the National Association of Fire Investigators (NAFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Bachelor of Science Degree in *Organizational Management* from Wilberforce University, Xenia, Ohio
Associates Degree in *Human Resource Management*, Air University CCAF, Gunter AFS, Alabama
Associates Degree in *Fire Science Technology*, Air University CCAF, Gunter AFS, Alabama
National Fire Academy *Arson Interview, Interrogation and Courtroom Testimony* course
National Fire Academy *Executive Analysis of Fire Operations in Emergency Management*
National Fire Academy *Executive Development* Program
National Fire Academy *Executive Planning* Program
Ohio Fire Academy *Basic Fire Investigation* and *Advanced Fire Investigation* programs
USAFR *Senior NCO Leadership Development Course*, Robins AFB, Georgia
Sinclair Community College Criminal Justice Academy, Dayton, Ohio

Member of the International Association of Arson Investigators (IAAI) and of the Ohio Chapter IAAI
Member of the National Association of Fire Investigators (NAFI)
Member of the National Society of Professional Insurance Investigators (NSPII)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1661 East Camelback Road, Suite 124
Phoenix, AZ 85016
(866) 552-6758 Telephone
(602) 216-2201 Facsimile

September 20, 2016

Re: RCG File No: 01707715
LLV Number: 3317574
VMF Location: 4949 East Van Buren Street in Phoenix, Arizona
Subject: Final Report

On July 5, 2016, Mr. Thomas D. Kane, IAAI-CFI, Fire Consultant with Rimkus Consulting Group Inc., conducted an origin and cause investigation of the fire incident that occurred on June 25, 2016 and involved LLV 3317574, VIN 1GBCS1041R2903697. The fire occurred while the vehicle was being driven on Highway 95 at milepost 159 in Parker, Arizona.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 4949 East Van Buren Street in Phoenix, Arizona. On June 5, 2016, we performed a comprehensive vehicle inspection, documented the incident, interviewed the operator/carrier, and reviewed the vehicle maintenance history. A technical review of this investigation was conducted by Mr. Jack Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of "National Fire Protection Association 921 – Guide for Fire & Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be in the left side of the engine compartment as you face the LLV from the front.

3. The specific ignition sequence and cause of the fire was determined to be the result of adverse electrical activity involving the positive electrical cable connected to the starter. The battery cable bypassed the upper cable mount and the lower cable mount was not secured. This allowed the battery cable to move freely over the top of the engine, subjecting it to greater than normal vibration from normal vehicle operation. The battery cable was severed mid-span, on top of the engine.

Observations

Exterior Inspection:

There were no signs of exterior body damage that would indicate that this vehicle was involved in a collision prior to the fire. The fire patterns were most severe towards the left side of the engine compartment and decreased in severity as one moved from the front to the rear of the vehicle.

Interior Inspection:

The cargo area was least affected by the fire. The observed fire patterns indicated that the fire spread into the cargo area from the operator compartment. The operator compartment sustained severe fire damage to the dashboard and all related electrical wiring for the instrument cluster.

Engine Compartment Inspection:

For the purpose of this inspection the engine compartment was divided into three sections: left, center, and right.

The left section sustained the most severe fire damage. This section contained some wiring and the positive battery cable that was connected to the starter. The battery cable bypassed the upper cable mount and the lower cable mount was not secured. This allowed the battery cable to move freely over the top of the engine, subjecting it to greater than normal vibration from normal vehicle operation. The battery cable was severed mid-span, on top of the engine. There were gouges on top of the valve cover that aligned with the severed battery cable. Small beads, consistent with electrical arcs, were observed on the starter end of the severed battery cable.

Undercarriage Inspection:

The fire patterns on the undercarriage were consistent with the previous observations. The fuel lines and fuel filter were intact and the remaining fire patterns indicated that the fire moved towards the fuel lines as opposed from emanating from them. The involved LLV was mounted on a GM frame and had a GM fuel filter system.

Fuse Panel Inspection:

The fuse panel was burned beyond recognition and the condition of the fuses could not be determined.

Area of Fire Origin:

The area of fire origin was identified as the left side of the engine compartment.

Potential Contributing Factors:

The unsecured positive battery cable running from the battery to the starter was the likely cause of this fire.

Evidence Collected:

No evidence was collected.

Interview:

The carrier/vehicle operator, provided the following account of the fire incident.

- He has been employed as a letter carrier for USPS for four years.
- LLV 3317574 is his assigned vehicle and he described the vehicle as a being in good condition.
- On the day of the fire, he had started his shift that morning and had been out in the field for several hours.
- The vehicle performance was normal and there were no indications of engine problems from the dashboard instrument cluster.
- He was driving uphill and heard a “clanging” sound coming from the engine.
- He pulled to the side of the road and saw white smoke coming from the engine compartment.
- The smoke color turned black within a few seconds and flames appeared from under the hood.
- He pulled all of the mail from the vehicle and called 911.
- He does not know how the fire might have started.

Service Records:

A review of the past service records for the involved LLV was conducted and there were no indications of recent work that had been performed involving the positive cable. However, the cable had not been properly secured which was a result of past repair of PM work.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted. Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Thomas D. Kane

Thomas D. Kane, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

September 20, 2016
RCG File No. 01707715

Photograph 1

Subject vehicle, LLV 3317574, VIN 1GBCS1041R2903697.



Photograph 2

Left side of engine compartment.



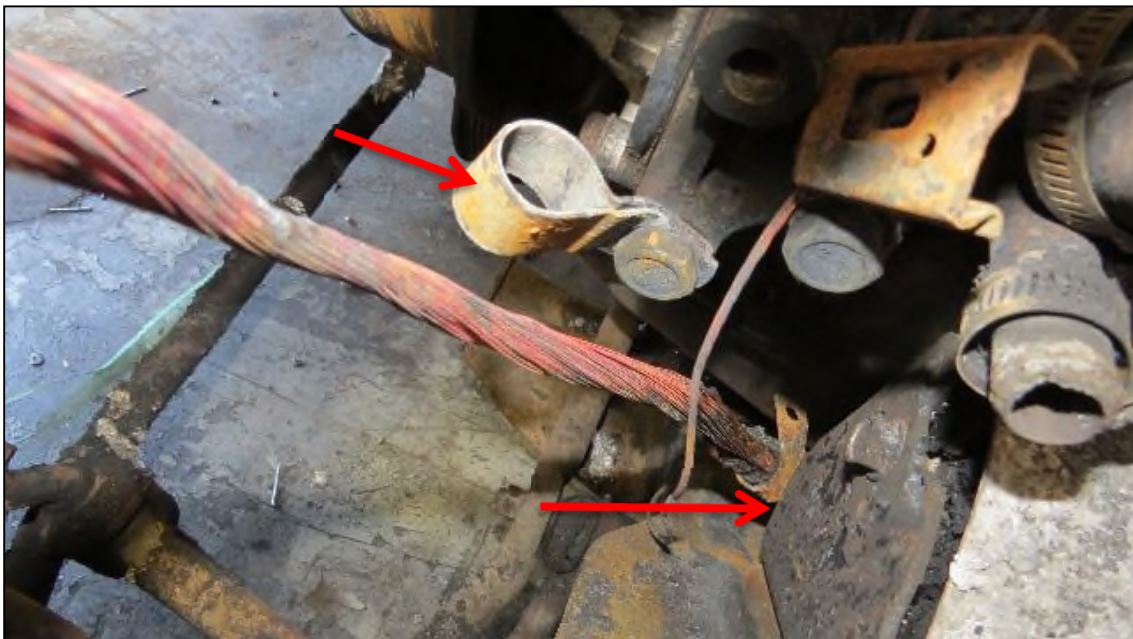
Photograph 3

Severed battery cable and gouges on top of engine valve cover.



Photograph 4

Bypassed battery cable mount and unsecured battery cable mount.



September 20, 2016
RCG File No. 01707715

CVs



**THOMAS D. KANE, I.A.A.I.-C.F.I., P.I.
FIRE CONSULTANT**

Mr. Kane specializes in fire origin and cause investigation, and consultation. Mr. Kane has over twenty-five years of experience in law enforcement with half of his career as an Arson Detective. Mr. Kane has investigated and determined the cause and origin of over six hundred fires occurring in commercial structures, residential homes, recreational vehicles, automobiles, and wild lands. Mr. Kane has been recognized as an expert witness in both criminal and civil court, in the fields of fire cause and origin, building construction, criminal investigations, firearms, transient criminal groups, and issues relating to building safety and security.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

State University of New York, College at Buffalo, Bachelor of Science, Criminal Justice.
City of New York, Police Academy, New York City Police Officer certification.
Suffolk County, New York, Police Academy, New York State Police Officer certification.
Phoenix Regional Police Academy, Arizona Police Officer certification.
International Association of Arson Investigators, Certified Fire Investigator, #28-036.
International Association of Arson Investigators, member since 2002.
International Association of Arson Investigators, Arizona Chapter, member since 2000.
Maricopa County Fire Investigation Task Force, member since 2000
FBI Joint Terrorism Task Force on Arson, formed to apprehend the "Phoenix Mountain Preserve Arsonist," in 2000.
National Association of Bunco Investigators, member since 1999.
Licensed Contractor, Arizona Registrar of Contractors, since 2000.
Licensed Private Investigator, Arizona Department of Public Safety, since 2004.

Mr. Kane has over five hundred hours of classroom and practical instruction in fire dynamics, arson, and general investigations. Classes have included interviews and interrogations, covert surveillance technology, fire science, fire behavior, fire chemistry, hazardous materials, flammable liquids, fire origin and cause determination, electrical fire investigation, explosion scene investigation, and evidence collection and preservation. These are to mention only some of the areas in which formal training has been received.

EMPLOYMENT HISTORY

1988 - 1989	New York City Police Department (NYPD)
1989 - 1993	Suffolk County Police Department (SCPD)
2004 - 2006	Crawford Investigative Services, Fire Investigator
2006 - 2008	Jerry James and Associates, Fire Investigator
2008 - 2013	Fire Cause Analysis, Fire Investigator
1993 - Present	Scottsdale Police Department (SPD)
2004 - Present	Private, Certified Fire Investigator (IAAI)



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
1661 East Camelback Road, Suite 124
Phoenix, Arizona 85016
Telephone: (866) 552-6758
Certificate of Authorization No. 15598-0
Certification Expiration Date March 10, 2020

July 10, 2019

Re: RCG File No: 100006031
LLV Number: 3317632
VMF Location: 1501 S. Cherrybell Stravenue Tucson, Arizona
Subject: Preliminary/Final Report

Dear ,

On June 7, 2019, a fire occurred involving a 1993 Grumman, LLV 3317632. At the time of the fire, the vehicle in operation near 2632 Camino Corona in Nogales, Arizona.

On June 14, 2019, Rimkus Consulting Group, Inc. was retained to examine LLV 3317632. Our inspection of the vehicle occurred on June 19, 2019 at the Vehicle Maintenance Facility located at 1501 S. Cherrybell Stravenue in Tucson, Arizona. In the course of our work, we completed an on-site inspection of the vehicle, including photographing the vehicle, arc mapping, and witness interviews. The work to complete this assignment was performed by Fire Consultant Thomas D. Kane, IAAI-CFI (V). This report was technically reviewed by Fire Division Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations", and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator."

Conclusions

1. The vehicle sustained minor fire damage to the engine compartment from a fire originating within the engine compartment.
2. The interior compartment sustained no fire damage.

3. The area of origin was determined to be on top of the engine where the EVAP canister fuel vapor return line runs in between the number 1 and 2 spark plug wires and over the exhaust manifold.
4. The specific ignition sequence and cause of the fire was a result of a failure of the EVAP canister fuel vapor return line that runs from a filter in front of the engine compartment, across the top of the engine, to the fuel injectors. It is designed to capture fuel vapors and redirect them through the fuel system. Per USPS mechanics, overfilling the fuel tank has been known to cause excess fuel to collect inside the EVAP system. The fuel vapor return line is made of plastic that is subject to high temperatures and engine vibration. In this instance, degradation of the fuel vapor return line over time caused fuel to leak onto hot engine surfaces (exhaust manifold) and/or electrical components (spark plug wires) resulting in ignition.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The front grille and lights of the LLV were observed to be intact with no fire damage. Smoke and soot deposits were observed on the hinge side of the hood. There were no signs of forced entry to the hood. The aluminum roof of the vehicle that covered the operator's compartment was intact.

No damage was observed to the exterior cargo area of the vehicle. There were no obvious signs of pre-fire collision damage. Exterior fire damage was confined to the hood.

Based on the fire patterns observed, it was determined the fire initiated within the engine compartment.

Interior Inspection:

The cargo area, operator cab, mail tray and dashboard did not sustain any fire damage.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5-liter (L), four-cylinder engine. The engine was equipped with a throttle body, fuel-injected system. The vehicle had a standard ignition coil. The engine compartment was observed with minor fire damage to the fuel injector air intake vent, throttle cable, spark plug wires 1 and 2, and EVAP canister fuel vapor return line.

This fire was detected early and quickly extinguished by the carrier. The remaining components located within the engine compartment did not sustain any fire damage.

Undercarriage Inspection:

There was no damage to the undercarriage.

Fuse Panel Inspection:

The fuse panel was intact. Each fuse was removed, visually inspected, and replaced. None of the fuses in the fuse panel were open.

Area of Fire Origin:

The area of fire origin as located on top of the engine where the EVAP canister fuel vapor return line runs in between the number 1 and 2 spark plug wires and over the exhaust manifold.

Potential Contributing Factors:

The EVAP canister fuel vapor return line runs from a filter in front of the engine compartment, across the top of the engine, to the fuel injectors. It is designed to capture fuel vapors and redirect them the fuel system. Per USPS mechanics, overfilling the fuel tank has been known to cause excess fuel to collect inside the EVAP system. The fuel vapor return line is made of plastic that is subject to high temperatures and engine vibration. In this instance, degradation of the fuel vapor return line over time caused fuel to leak onto hot engine surfaces (exhaust manifold) and/or electrical components (spark plug wires) resulting in ignition.

Evidence Collected:

No evidence was collected during this inspection.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records it was determined that recent work completed on the vehicle could not be contributed to the cause of the fire.

Interview:

On Friday June 7, 2019, at 1:40 P.M. while delivering route 2107 on 2632 Camino Corona, city carrier noticed his vehicle had a weird smell and then noticed there was smoke coming out of the engine area. When he looked inside the

hood, he saw the fire and dumped all of his water on the area and it turned off. He immediately called his supervisors at the Nogales Station.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,

RIMKUS CONSULTING GROUP, INC.

Thomas D. Kane

Thomas D. Kane, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

July 10, 2019
Rimkus File No. 100006031

Photograph 1

Front and driver side of LLV 3317632.



Photograph 2

Front and mail side of LLV 3317632.



July 10, 2019
Rimkus File No. 100006031

Photograph 3
Rear of LLV 3317632.



Photograph 4
Driver compartment of LLV 3317632.

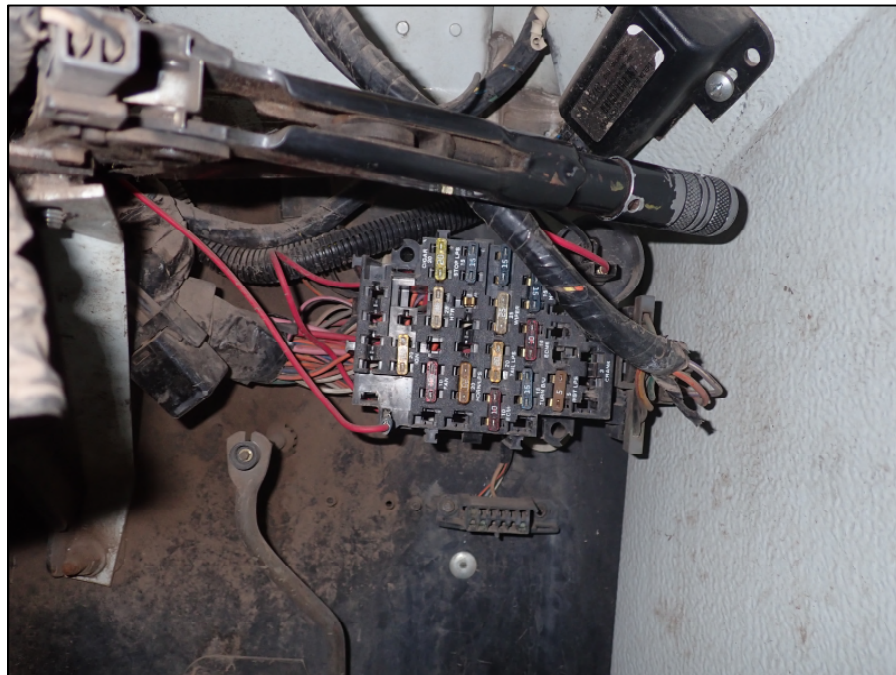


July 10, 2019
Rimkus File No. 100006031

Photograph 5
Dashboard of LLV 3317632.



Photograph 6
Fuse panel of LLV 3317632.

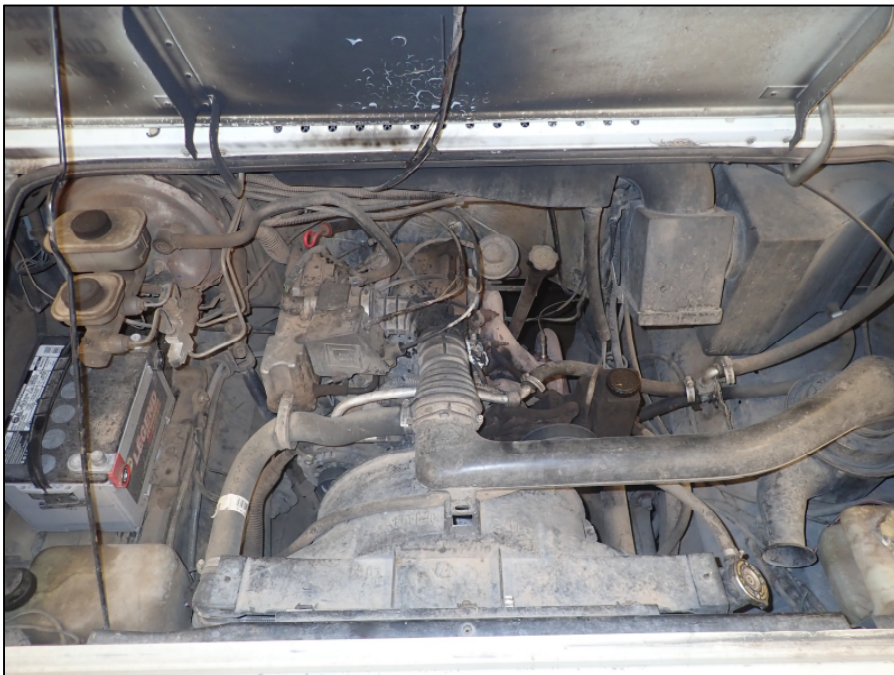


July 10, 2019
Rimkus File No. 100006031

Photograph 7
Cargo area of LLV 3317632.



Photograph 8
Engine compartment of LLV 3317632.



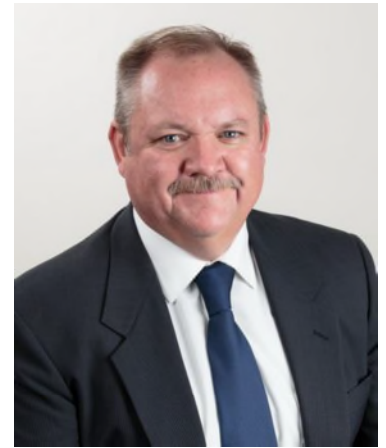
Photograph 9
Area of fire origin.



Photograph 10
EVAP canister fuel vapor return line.



Curriculum Vitae



Thomas D. Kane, CFI, CFI(V)

Fire Consultant
Fire Division

Background

Mr. Kane is a police officer with a B.S. in Criminal Justice, a licensed private investigator, a former licensed construction contractor, and a Certified Fire Investigator specializing in fire origin and cause investigation, and consultation.

Of his over 30 years of experience in law enforcement, he has spent half of that career as an arson detective, determining the cause and origin of over 1,000 fires in commercial and residential structures, recreational vehicles, automobiles, marine vessels, heavy equipment and wild lands.

Mr. Kane has been recognized as an expert witness in both criminal and civil court, in the fields of fire cause and origin, building construction, criminal investigations, firearms, transient criminal groups, and issues relating to building safety and security.

Contact Information

(602) 216-2200

tkane@rimkus.com

1661 East Camelback Road,
Suite 124
Phoenix, AZ 85016



Rimkus Consulting Group, Inc.
14635 W. 95th Street
Lenexa, Kansas 66215
Telephone: (913) 904-5101

January 28, 2020

Re: RCG File No: 100023177
LLV Number: 3317836
VMF Location: 6029 Broadmoor Street Mission, Kansas
Subject: Preliminary/Final Report

On December 22, 2019, a fire involving USPS LLV 3317836 reportedly occurred while being operated on 399th Street and Plum Creek Road in Osawatomie, Kansas. The vehicle was manufactured by General Motors in 1993 and was a Grumman model LLV-A with VIN 1GBCS1042R2903577.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Shawnee Mission VMF located at 6029 Broadmoor Street in Mission, Kansas. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on January 6, 2020. The vehicle examination was conducted by Fire Consultant Phillip A. Keena, IAAI-CFI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations" and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the right rear quadrant of the engine compartment in the area of the fuel line connection and fuel rail.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of ignition of either leaking or atomized engine fluid being ignited by either a hot surface ignition or electrical spark.

Observations

Exterior Inspection:

For the purpose of this report, the left side of the vehicle refers to the mail side and the right side refers to the driver's side. We observed heat and direct fire damage with mass loss to the front fender of the driver side and mail side of the LLV. We observed a greater degree of mass loss to the driver side fender. We observed radial patterns on both sides with the convex of the pattern towards the engine compartment. We observed a demarcation line in the damage patterns with the lowest point of the lines towards the engine compartment. All patterns indicated the fire originated in the engine compartment and extended out to the exterior of the vehicle.

There was no evidence to indicate that the vehicle had recently been involved in a collision. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

The interior of the LLV was examined. We observed smoke damage to the cargo compartment with the greatest degree of smoke damage to the portion adjacent to the driver's compartment. Smoke patterns indicated the smoke travel was from the driver's compartment to the cargo compartment. We observed smoke, heat, and direct fire damage to the driver's compartment with the greatest degree of damage to the driver side of the compartment. All patterns indicated that the fire originated in the engine compartment and extended into the driver's compartment.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L fuel injected gasoline engine with a standard coil. Based upon the fire damage, the fire movement and intensity patterns, and a systematic evaluation of the physical evidence, we determined the fire originated on the driver side portion of the engine compartment. We examined the driver side portion of the engine compartment. We observed mass loss to the brake fluid reservoir. We observed heat and direct fire damage with mass loss to metal components located on the side of the engine. We observed demarcation lines in the damage patterns indicating the fire travel was from the upper rear portion of the engine. We examined the upper rear portion of the engine on the driver side. This area contained the incoming fuel line, connection, and fuel rail. We observed heat and direct

fire damage with oxidation to the metal components. We observed the greatest degree of oxidation and damage was to the rear portion of the fuel rail and incoming fuel line connection. All patterns indicated this was the area of origin.

The battery for the vehicle was not present at this inspection. The battery cables were examined and found to be intact with thermal damage only, no adverse electrical activity was observed. The battery cables were eliminated as a cause of the fire. The conductors for the alternator and starter were examined. We did not observe any evidence of an adverse electrical event to these conductors. The conductors for the alternator and starter were eliminated as a cause of the fire. The engine oil and transmission fluid were examined and observed to be within their normal operating range.

Based upon the fire damage, the fire movement and intensity patterns, and a systematic evaluation of the physical evidence, we determined the fire originated in the area of the upper rear portion of the engine on the driver side. This area contained the incoming fuel line, connection, and fuel rail.

Undercarriage Inspection:

We did not observe any direct fire damage to the portion of undercarriage for the cargo compartment and driver compartment. We observed heat and direct fire damage to the portion of undercarriage for the engine compartment. All patterns indicated the fire travel was from the engine compartment to the undercarriage.

Fuse Panel Inspection:

The fuse panel was positioned behind the instrument panel in the dashboard on the driver's side. We observed heat and direct fire damage with full consumption of all combustible material. We examined the remaining conductors and connections. We did not observe any evidence of an adverse electrical event. The respective wiring harness associated with the fuse panel was inspected and did not reveal any unexpected damages from a fire with this intensity.

Fire patterns indicated the damage to the fuse panel was due to the fire originating from the driver side of the engine compartment and extending into the driver's compartment.

Area of Fire Origin:

The area of fire origin was the upper rear portion of the engine on the driver side. This area contained the incoming fuel line, connection, and fuel rail.

Contributing Factors:

Based on the remaining physical evidence, the most probable cause of this fire was from either leaking or atomized gasoline fuel being ignited from either contact with a hot surface

or an electrical spark. The mail carrier that used this vehicle two days prior to the fire reported an odor of gasoline. The mail carrier was taken out of the vehicle and placed in another one. The vehicle was not placed out of service.

Evidence Collected:

No physical evidence was collected.

Witness Statements:

The driver was interviewed over the phone. He stated that he was doing the Amazon deliveries on Sunday, December 22, 2019. He had made approximately 20 stops when he noticed the engine start to "sputter" and noticed smoke coming from the engine compartment. He pulled over thinking that the engine was overheating. A passerby stopped and told him the engine was on fire. Mr. went to the front of the vehicle and looked underneath the engine compartment and saw a pool of fire on the ground and fire dripping from the engine. He stated the dripping fire was coming from the driver side portion of the engine and near the back center of the engine. 911 had been initiated by the passerby. Mr. then proceeded to remove the packages from the cargo area. The fire department arrived and extinguished the fire.

Mr. stated that the mail carrier who used the LLV two days prior to the fire reported an odor of gasoline coming from the engine compartment. They took her off the vehicle and placed her in another one. The LLV was not used on Saturday. When Mr. arrived on Sunday, the keys were in a location that designated the LLV as one that could be used. It was not placed out of service.

Service Records:

A review of the service records revealed no recent repairs or service that would have contributed to the cause of the fire. It was not able to be determined by the service records if the fuel system had been service or replaced recently.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Phillip A. Keena

Phillip A. Keena, IAAI-CFI
Fire Consultant

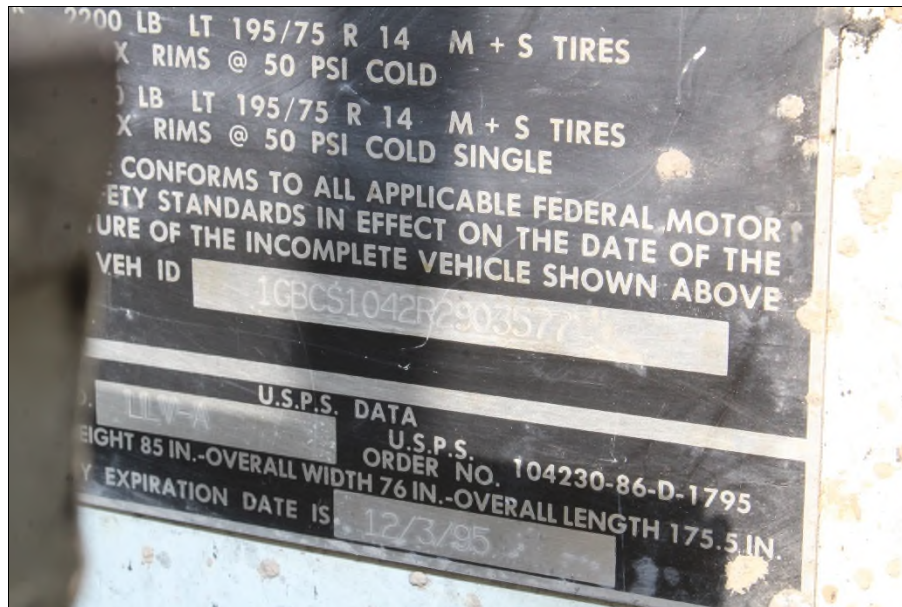
David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

January 28, 2020
Rimkus File No. 100023177

Photograph 1
Vehicle Identification Number.



Photograph 2
Front of the vehicle with greatest degree of damage to driver side of engine compartment.



January 28, 2020
Rinkus File No. 100023177

Photograph 3

Driver side exterior showing fire travel originating from the engine compartment.



Photograph 4

Rear exterior with smoke damage. Smoke patterns indicated smoke travel was from the cargo compartment.



Photograph 5

Mail side exterior showing that the fire originated in the engine compartment.



Photograph 6

Undercarriage under cargo area and driver's compartment with no direct fire damage.



Photograph 7

Undercarriage under the engine compartment with direct fire damage. All patterns indicated the fire originated in the engine compartment.



Photograph 8

Mail side of the engine compartment with heat and direct fire damage. All patterns indicated the fire travel was from the driver side to the mail side.



Photograph 9

Front of the engine with heat and direct fire damage. All patterns indicated the fire travel was from the driver side of the engine compartment to the front of the engine.



Photograph 10

Driver side of the engine compartment with heat and direct fire damage. All patterns indicated the fire travel was from the back on the engine compartment to the front.



Photograph 11

All patterns indicated the fire originated in the area of the fuel line connected and fuel rail.



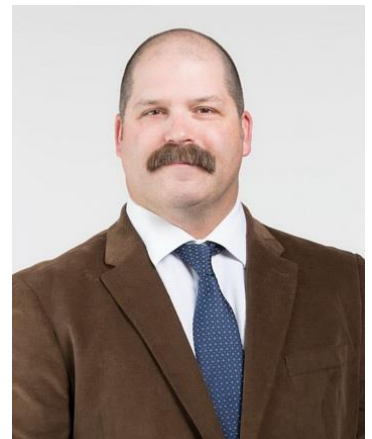
Photograph 12

Area of origin was in the area of the fuel line connection and the fuel rail.



January 28, 2020
Rimkus File No. 100023177

Curriculum Vitae



Phillip A. Keena, IAAI-CFI

Fire Consultant
Fire Division

Background

Mr. Keena holds an A.A. in Fire Administration, a B.S. in Organizational Leadership, and an M.S. in Management. He is a Certified Fire Investigator through the IAAI, as well as in Missouri. He is also a licensed Private Fire Investigator in Illinois and Missouri. Mr. Keena also holds a Private Detective License in Iowa, Kansas, Montana, Nebraska, and Oklahoma.

As a firefighter for 25+ years, Mr. Keena has seen a wide range of fire, arson, and explosion scenarios. As a fire investigator, he has conducted origin and cause investigations on fatal structure fires, residential fires, commercial fires, and vehicle fires.

Mr. Keena is highly knowledgeable about fire suppression operations, technical rescue, hazardous materials incidents, building construction plans, and fire/explosion investigations. He also has an extensive knowledge in the residential construction industry due to his experience as a licensed contractor for 15+ years.

Professional Engagements

- Firefighter
 - Lawrence Fire Dept. – Lawrence, KS (1993-1996), As a member of the firefighting team, he was responsible for fire suppression and fire/non-fire response activities
 - Overland Park Fire Department – Overland Park, KS (1996-Present), As a member of the firefighting team, he is responsible for fire suppression and fire/non-fire response activities.
- Fire/Arson/Explosions
 - Investigator – Lenexa, KS (2012-2018), Investigated and analyzed cause and origin of damage. Collected, documented, and preserved evidence to ensure the chain of custody.

Contact Information

(913) 904-5101
pkeena@rimkus.com
14635 W. 95th Street
Lenexa, KS 66215



Rimkus Consulting Group, Inc.
921 Eastwind Drive, Suite 110
Westerville, OH 43081
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

March 30, 2017

Re: RCG File No:

LLV: 53602481
VMF: 3317866
Subject: 1111 East 5th Street, Dayton, Ohio 45401
Preliminary/Final Report

Dear

On March 13, 2017, a vehicle fire occurred in a US Postal Service LLV at 305 South Market Street in Troy, Ohio. On March 16, 2017, Rimkus Consulting Group, Inc. was retained to examine LLV 3317866, VIN 1GBCS1042R290403. On March 21, 2017, we examined the fire damaged vehicle at the USPS Vehicle Maintenance Facility at 1111 East 5th Street in Dayton, Ohio.

In the course of our work we interviewed the VMF staff and carrier driver, examined the fire damaged vehicle, collected evidence, and collected and reviewed service records. Our work to complete this assignment was performed by Fire Consultant W. Timothy Spradlin, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire & Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the passenger's compartment of the involved LLV.

2. The specific area of fire origin was determined to be at the headlamp rheostat switch positioned in the left side of the dashboard.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch, which heated and ignited surrounding combustible materials.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. Severe fire damage was observed in the passenger compartment. Total mass loss was observed to areas of the windshield, dashboard assembly, and multiple exterior upper body components. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. All four wheels and tires were intact and undamaged. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Severe fire damage was observed to the aluminum vehicle body. The cab roof with the A posts was melted and collapsed. The windshield glass had collapsed into the interior. The driver's door was heat damaged with peeling paint on the top half. The cargo area roof was collapsed. The upper half of the cargo section sidewalls was heat damaged with peeling paint. The rear cargo door was heat damaged and collapsed. The lower panel with latch was in place indicating the door was closed at the time of the fire. The hood and engine compartment were intact and undamaged. Based on our observations of the exterior damage patterns, it is our opinion the fire originated inside the passenger's compartment and extended to the rear cargo section of the vehicle.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage to the passenger compartment and dashboard area. Severe fire damage was also observed in the cargo area. The most severe fire damage and mass loss was observed to the dashboard area, firewall, steering wheel assembly, and driver's seat. We observed interior

damage at the driver's door. All combustibles were consumed, with the remains of the seat frame and steering wheel column in place. The sorting table on the passenger side was severely damaged and collapsed onto the cab floor. The dashboard section was consumed and collapsed with exposed wiring circuits extending down to the floor. There was collapsed structural debris, windshield glass, and fire-damaged cargo debris on the floor.

Severe fire damage was observed to the cargo section from the rear door. We observed fire and water damaged mail cargo piled inside the space. We observed fire damage patterns and melted aluminum on the interior walls of the cargo section. Based on our observations, it is our opinion the damage in the cargo section was an extension from a fire in the passenger's compartment toward the front of the vehicle.

We excavated the fire debris on the driver's side of the passenger's compartment. We examined collapsed debris, components, and the damaged wiring. We observed fractured electrical circuits in the left side remains of the dash section adjacent to the original location of the headlight switch. We cleaned and examined the floor. We recovered the fire damaged remains of the headlight switch melted into aluminum debris from the dash body. We observed the steel spiral support of the heater defroster hoses in the collapse debris.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine. We observed heat damage to the rear of the engine adjacent to the cab. Moderate heat damage was observed to the top components of the engine compartment. Severe fire damage was observed to the aluminum bulkhead panel separating the engine compartment from the driver compartment. All battery and ignition components were intact and undamaged. Transmission and brake fluid were within normal levels. The oil dipstick top was heat damaged and melted; we were unable to check the oil level. Based on our observations of the damage patterns, it is our opinion that the heat damage at the rear top of the engine was an extension of fire from within the interior passenger's compartment.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not

show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks or failures.

Fuse Panel Inspection:

Examination of the fuse panel revealed severe fire damage to the panel and all of the fuses, due to the severe fire damage we were not able to determine if any fuses were blown.

Area of Fire Origin:

Based on our observations, it is our opinion the area of fire origin was in the driver compartment on the left side of the steering column at the headlight rheostat switch. Fire damage was limited to melting and some char to the plastic switch body and adjacent electrical circuits.

Contributing Factors:

The LLV reportedly was being driven at the time of the fire. The headlamps were in the "on" position per policy. A failure of the headlamp rheostat switch caused it to heat and ignited surrounding combustible materials. Based on our examination it was our opinion overheating of the headlamp rheostat switch was the source of the fire ignition.

Evidence Collected:

The fire damaged remains of the headlight switch and the molten aluminum debris it was attached within was collected as evidence. The evidence was shipped to the Charlotte office for examination.

An examination of the headlamp rheostat switch was conducted in the Rimkus laboratory on March 29, 2017. Present was Technical Fire Manager David R. Meyers, IAAI-CFI and Senior Engineer Mark H. Nelson, P.E. The switch was observed with severe fire damage and mass loss to the combustible components of the switch. The remaining components were observed with severe fire damage and oxidation. The wiring harness was consumed by fire and was unable to be examined. The most severe fire damage and mass loss was observed to the wiring harness connection terminals on the upper back side of the switch housing. The damage became less severe from this area. Based on the remaining physical evidence observed, it is our opinion the fire originated at the wiring harness terminal assembly of the headlamp rheostat switch.

Interviews:

On March 21, 2017, we interviewed the VMF Manager at the Dayton VMF. He provided the written statements from the carrier driver, the postmaster and the LLV maintenance records. According to the driver carrier was driving the LLV on a Sunday Amazon delivery when he smelled and saw smoke from the left side of the dash. He then saw a flame coming through a hole in the top of the dash above the headlight switch. He called the postmaster and fire department, and then attempted to salvage some of the cargo before the fire extended.

Mr. stated the LLV had a new headlight switch installed on March 7, 2017. He stated the vehicle had no chronic problems or recent major maintenance issues. He stated that there are a lot of problems with failing headlight and dimmer switches in the LLV fleet. Mr. provided an exemplar headlight switch for us to compare during our examination. He stated in his opinion the fire was a result of a combination of factors; an aging LLV fleet with lightweight wiring, low quality replacement parts and new policies on keeping headlights with four-way flashers on at all times when the vehicle is operating. He stated that there are some upgraded connector kits being installed in the LLVs for the headlight and dimmer switches. The kits have heavier gauge wire to dissipate increased heat, but this LLV had not been upgraded.

Service Records:

A review of the provided service records for the involved LLV was conducted. According to the maintenance records for the vehicle it had a new headlight switch installed in March 17, 2017. There were no other noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Spradlin

William T. Spradlin, IAAI - CFI, CI, NAFI - CFEI, CVFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 30, 2017
RCG File No. 53602481

Photograph 1

Driver compartment aluminum roof, windshield and aluminum cargo roof collapsed.



Photograph 2

Fire damage at driver compartment extending to the fender well and rear.



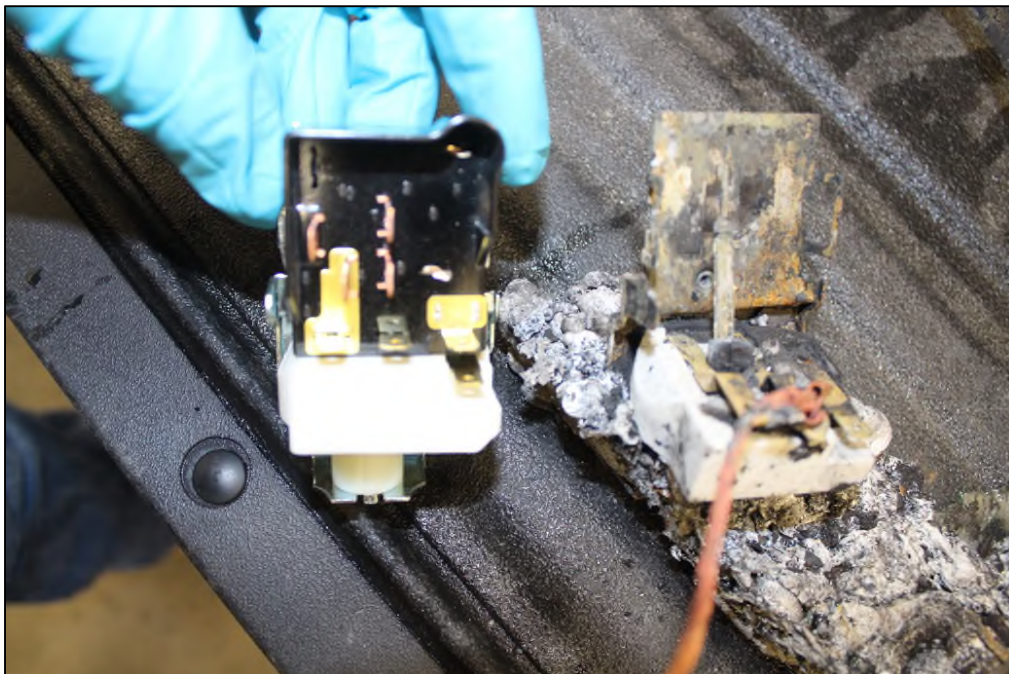
Photograph 3

Fractured electrical circuits in area of origin where the headlight switch was installed.



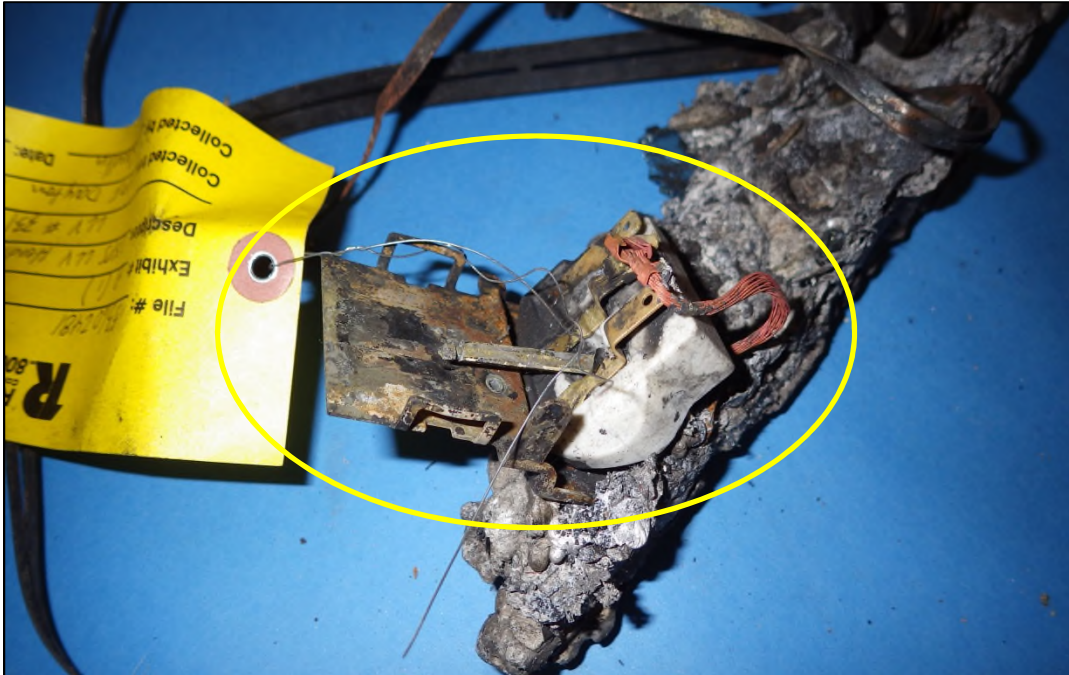
Photograph 4

Exemplar new headlight switch with fire damaged switch recovered from debris.



Photograph 5

A view of the remains of the headlamp Rheostat Switch during the lab exam.



Photograph 6

The wiring harness terminal assembly, observe the severe fire damage and mass loss.



March 30, 2017
RCG File No. 53602481

CVs



**WILLIAM TIMOTHY SPRADLIN, IAAI-CFI, CI, FIT, NAFI-CFEI
Fire Consultant**

Mr. Tim Spradlin has over 35 years' experience in firefighting, law enforcement, fire, arson and bombing investigation. His fire / explosion investigation work spans over 20 years of service, and he has three related college degrees. His career includes work as a full-time fire lieutenant, captain, deputy chief and fire chief in Xenia Township, Ohio. Mr. Spradlin also served as a reserve deputy sheriff with the Greene County Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He retired from 32 years public safety work as the Chief of the State of Ohio Fire Marshal's Fire – Explosion Investigation Bureau. From January 2008 until September 2014 Mr. Spradlin was the full-time chief fire / arson investigator for Ohio. He was also the curriculum manager / instructor for the Ohio Fire Academy fire investigation programs.

Mr. Spradlin also served in the United States Air Force, where he served 4 years active duty and 26 years reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant / First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the US Army in 2007 for combat meritorious service.

He currently serves as a police officer in the Village of Yellow Springs and as a volunteer fire training officer with the Xenia Township Fire Department in Ohio. Mr. Spradlin also teaches in the Clark State Community College fire programs and the Sinclair Community College Basic Police Officer Training Academy.

Mr. Spradlin is a certified fire investigator (CFI), fire investigation technician (FIT) and certified instructor (CI) by the International Association of Arson Investigators (IAAI). He is also a certified fire explosion investigator (CFEI) by the National Association of Fire Investigators (NAFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Bachelor of Science Degree in *Organizational Management* from Wilberforce University, Xenia, Ohio
Associates Degree in *Human Resource Management*, Air University CCAF, Gunter AFS, Alabama
Associates Degree in *Fire Science Technology*, Air University CCAF, Gunter AFS, Alabama
National Fire Academy *Arson Interview, Interrogation and Courtroom Testimony* course
National Fire Academy *Executive Analysis of Fire Operations in Emergency Management*
National Fire Academy *Executive Development* Program
National Fire Academy *Executive Planning* Program
Ohio Fire Academy *Basic Fire Investigation* and *Advanced Fire Investigation* programs
USAFR *Senior NCO Leadership Development Course*, Robins AFB, Georgia
Sinclair Community College Criminal Justice Academy, Dayton, Ohio

Member of the International Association of Arson Investigators (IAAI) and of the Ohio Chapter IAAI
Member of the National Association of Fire Investigators (NAFI)
Member of the National Society of Professional Insurance Investigators (NSPII)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
4000 Eagle Point Corporate Drive
Suite 122
Birmingham, AL 35242
(205) 314-5718 Telephone
(770) 438-2189 Facsimile

October 27, 2016

Re: RCG File No: 53005344
LLV Number: 3318313
VMF Location: 100 Congress Street in Mobile, Alabama
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 3318313. The vehicle was examined at the USPS Mobile VMF located at 100 Congress Street in Mobile, Alabama. The fire incident reportedly occurred on August 31, 2016, while the vehicle was being driven.

In the course of our work, the vehicle was inspected and photographed and the mechanics were interviewed at the VMF in Mobile, Alabama on September 13, 2016. Our work to complete this assignment was performed by Fire Consultant Ronald Blankenship, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. An analysis of the observable fire patterns and physical evidence indicated that the specific area of fire origin within the engine compartment was on the driver's side of the engine compartment.

3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the damage and the lack of discernible physical evidence.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The exterior examination of the vehicle revealed that the aluminum exterior had sustained severe damage due to thermal heating that included the hood, driver's side front fender, passenger's front fender and the vehicle's roof above the passenger compartment. All of the vehicle's glass had failed due to thermal heating. The majority of the front tires had been consumed by the fire. The greatest degree of fire damage was observed on the driver's side.

Interior Inspection:

The passenger compartment of the vehicle was examined and fire damage was observed throughout. The majority of the combustible materials had been consumed by the fire. An examination of the electrical conductors located along the dash revealed that there was no evidence of adverse electrical activity. The greatest degree of fire damage in the passenger compartment was along the driver's side.

Engine Compartment Inspection:

The engine compartment of the vehicle was examined and we observed that the majority of the combustible materials had been consumed by the fire. The soft metals along the driver's side had failed and/or softened due to thermal heating. The most significant fire damage was observed along the driver's side. This was consistent with the fire originating along the driver's side. The involved LLV was equipped with a GM fuel filter system.

Undercarriage Inspection:

The undercarriage of the vehicle was examined and we observed no visible fire damage. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

Due to the extensive fire damage, the fuse panel could not be inspected.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment on the driver's side.

Potential Contributing Factors:

Based on the driver's statement, a potential contributing factor was a possible flammable fluid leak that atomized onto the hot surface of the engine. Also, a repair had been made to the ignition module prior to the fire, that repair could also not be eliminated as a potential contributing factor.

Evidence Collected:

No evidence was collected.

Interviews:

On September 13, 2016, a mechanic that worked at the USPS Mobile VMF reported the following information:

- The vehicle was manufactured on a GM frame with a GM fuel filter.
- The vehicle was equipped with a 2.2 Liter gasoline engine.

On August 31, 2016 the operator of the vehicle at the time of the fire event reported the following information:

- On August 31, 2016, at approximately 3:45 p.m., she was delivering mail on Mosley Road in Fairhope, Alabama when she began to smell an odor that was similar to "burning brush".
- Shortly after she smelled the odor, the engine began to skip and lost power.
- She checked the dash gauges and observed that the oil pressure had dropped.
- She began to observe smoke and she pulled past the mailboxes and turned off the engine.
- The smell of smoke increased and she observed smoke coming out from the hood and infiltrating the cab.
- While she was removing the mail, she observed the fire in front of the windshield in the middle of the vehicle.

- She removed the mail and called 911.

Service Records:

A review of the service records for the involved LLV indicated that it had last been serviced on August 26, 2016. The listed service stated "Ignition Module/Coils" repair. A repair on August 22, 2016 was listed as "coils & module VPO". These listed repairs could not be conclusively eliminated as being a contributing factor for the fire. There were no other listed recent repairs that appeared to be consistent with the area of origin for the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Ronald L. Blankenship

Ronald L. Blankenship, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

October 27, 2016
RCG File No. 53005344

Photograph 1

View of the front of the vehicle.



Photograph 2

View of the passenger side.



October 27, 2016
RCG File No. 53005344

Photograph 3

View of the driver's side of the engine.



Photograph 4

View of the passenger compartment.



October 27, 2016
RCG File No. 53005344

CVs



RONALD BLANKENSHIP, C.F.I. FIRE CONSULTANT

Mr. Blankenship is a Certified Fire Investigator (C.F.I.) by the International Association of Arson Investigators (IAAI) and the State of Alabama Fire College, a Certified Advanced Fire Cause & Origin Expert Witness, a Certified Fire Inspector, a Certified Hazardous Materials Technician, and a Certified Fire Officer through the State of Alabama. Mr. Blankenship is also a Certified Home Inspector through The Home Inspection Institute and a Certified Inspector through the American Society of Home Inspectors (ASHI).

Mr. Blankenship has an extensive background in fire firefighting & prevention in which he served 20 years with the City of Auburn's Fire Department, six of those years as Fire Chief. Mr. Blankenship also served as the Fire Chief for the City of Phenix - City Fire Rescue Services for four years. While working with the Alabama State Fire Marshal's office, Mr. Blankenship was a Deputy State Fire Marshal and a Certified Law Enforcement Officer. Mr. Blankenship's experience encompasses investigation of fires, explosions, bombings and all related crimes to ensure the origin and cause of the incidents were properly documented. Mr. Blankenship has testified as an expert in criminal court related to fire investigations he has performed. Mr. Blankenship's professional experience includes, but is not limited to residential, commercial, and vehicle fire origin and cause investigation and explosions. Mr. Blankenship owned and operated a Professional Chimney Services for ten years. He was certified wood stove and fireplace technician. Mr. Blankenship owned and operated Complete Home Inspectors for nine years.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. Fire Administration – University of Memphis, Memphis, TN
A.A. Fire Science – Chattahoochee Valley Community College
Certified Home Inspector – The Home Inspection Institute
Executive Fire Officer – National Fire Academy

TRAINING/CERTIFICATES

Certified Fire Inspector • Alabama Peace Officers Standards (APOST) Law Enforcement • Firefighter I • Firefighter II • Fire Instructor I • Fire Instructor II • Fire Inspector I • Fire Inspector II • Fire Officer I • Fire Officer II • Fire Officer III • Fire Investigator • Advanced Fire Investigator • Advanced Fire Cause & Origin Expert Witness • Incident Command System • Excavation & Trenching Cave-In Rescue • Self-Contained Breathing Apparatus • Fire Department Management • Hazardous Materials Technician • Building Construction for Fire Suppression Forces • ISO Grading Process • Certified Home Inspector -The Home Inspection Institute • American Society of Home Inspectors.

EMPLOYMENT HISTORY

2010 – Present	Rimkus Consulting Group, Inc.
2003 – 2010	Complete Home Inspectors, LLC
2005 – 2007	Southern Union State Community College
2002 – 2003	Alabama State Fire Marshal's Office
2001 – 2002	L.G. Fire Sprinkler Services



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
4000 Eagle Point Corporate Drive
Suite 122
Birmingham, Alabama 35242
(205) 314-5718 Telephone
(770) 438-2189 Facsimile

November 22, 2016

Re: RCG File No: 44301038
LLV Number: 3318631
VMF Location: 6701 Winton Blount Boulevard in Montgomery, Georgia
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 3318631, VIN 1GBCS1049R2904788. The vehicle was examined at the USPS Montgomery VMF located at 6701 Winton Blount Boulevard in Montgomery, Georgia. The fire incident reportedly occurred on September 1, 2016.

In the course of our work, we examined and documented the fire damaged vehicle on September 13, 2016 and interviewed the carrier on September 14, 2016. Our work to complete this assignment was performed by Fire Consultant, Mr. Gregory M. Cloer, IAAI-CFI. This report and case was reviewed by Mr. Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the dashboard of the involved LLV.
2. The specific area of fire origin was determined to be at and around the headlamp switch positioned in the dashboard.

3. The specific ignition sequence and cause of the fire was the direct result of a failure and a resistive heating event involving the rheostat switch associated with the headlamp switch.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The roof above the passenger compartment and front sides of the passenger compartment had been consumed during the fire event. The cargo compartment walls, roof, and rear door remained intact.

Interior Inspection:

Examination of the interior of the vehicle revealed that the majority of the combustible materials in the passenger compartment and the bulkhead had been consumed during the fire event. The most severe fire damage was observed in the area of the bulkhead near the center of the vehicle. The rear cargo compartment remained intact.

Engine Compartment Inspection:

The engine compartment was examined. Fire damage was observed along the top surfaces of the combustible materials located within the engine compartment. The greatest degree of fire damage was observed towards the top rear engine compartment.

The battery had sustained fire damage. The electrical conductors in the engine compartment were examined. There was no adverse electrical activity observed on the electrical conductors within the engine compartment.

The transmission fluid was examined and observed to be within the normal operating range. The engine oil dipstick was not retrievable from the engine oil fill tube.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire patterns extending from the undercarriage of the vehicle. The LLV was mounted on a GM frame. The fuel tank and fuel lines along the frame rail did not show any signs of failure. The fuel filter was an AC Delco model and was located along the left frame rail. The exhaust system was intact and the transmission did not reveal any leaks. The transmission was a non-baffled transmission.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage. The continuity of the fuses could not be conclusively determined due to the severity of the damage.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the bulkhead near the center of the vehicle in the area of the dashboard. The specific area of fire origin was determined to be at the headlamp switch located in the left side of the operator dashboard.

Potential Contributing Factors:

It was reported that the vehicle was making "popping" noises and the engine began losing power prior to the fire event.

Evidence Collected:

The burned headlamp switch along with a stranded wiring conductor found in the area of the headlamp switch were collected as evidence and were submitted to Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

The headlamp switch and associated electrical wiring and wiring harness was examined in the lab. The examination confirmed a failure occurred in the headlamp rheostat switch where the fire originated.

Interview:

On September 14, 2016, an interview was conducted with the carrier, who reported the following:

- Her primary vehicle was in the shop for repairs and was driving LLV 3318631 as a spare vehicle on loan from the Montgomery VMF.
- She had driven LLV 3318631 on Wednesday, August 31, 2016, during her route. There were no reported problems with the vehicle during her route.
- On September 1, 2016, she started LLV 3318631 around 7:00 A.M. to ensure that it would start. She then turned it off. At approximately 8:00 A.M., Ms. Snell started her route.
- During her route, she drove with the headlamps off and had the hazards on.

- According to her, approximately 3 to 4 hours into her route, she noticed the engine losing power. She called her supervisor to alert her of the mechanical problem.
- She continued to drive the vehicle for approximately 15 to 20 minutes. She then heard a “popping” sound come from the engine compartment and then observed smoke coming from the sides of the engine compartment.
- She exited the vehicle and heard another “popping” sound and she then observed flames venting from the engine compartment.
- She did not smell the odor of gasoline prior to the fire event and did not lose power steering or braking abilities.
- She did not observe smoke inside the passenger compartment prior to the fire event.

Service Records:

A review of the service records for the involved LLV did not indicate any recent work or repairs that would have caused or contributed to the cause of the fire. There were no entries involving the electrical system of the headlamp switch.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

November 22, 2016
RCG File No. 44301038

Photograph 1

View of the front and left side exterior.



Photograph 2

View of the right exterior.



November 22, 2016
RCG File No. 44301038

Photograph 3

View of the rear exterior.



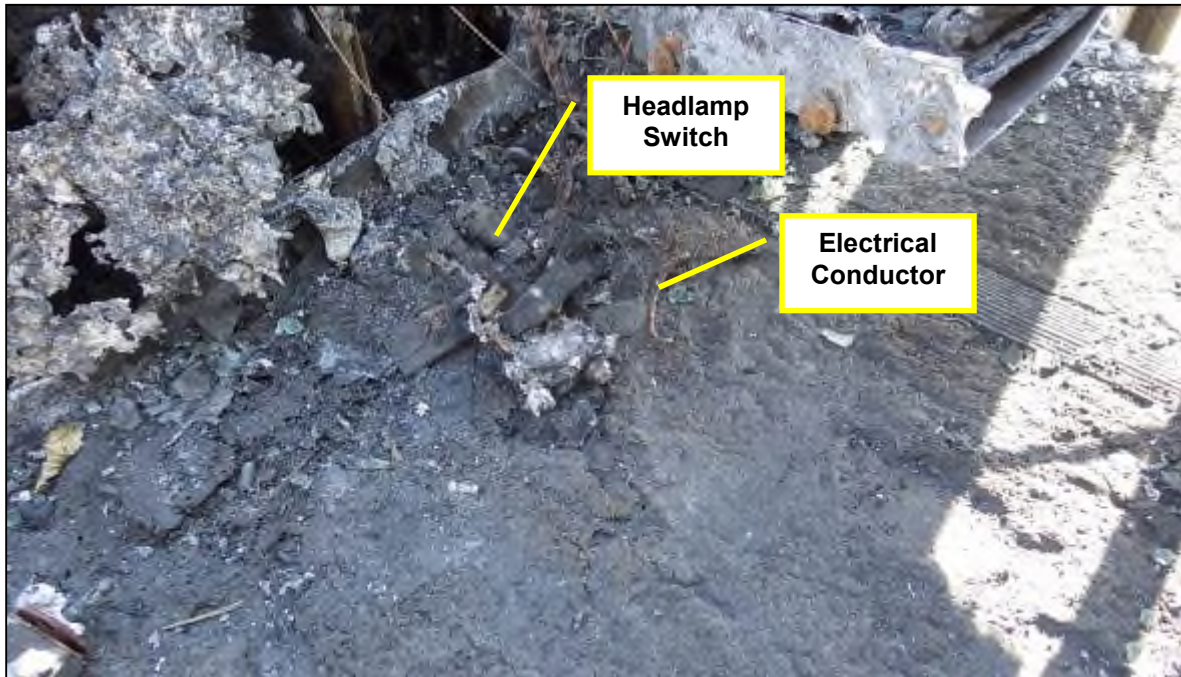
Photograph 4

View of the fire patterns and fire damage in the engine compartment.



Photograph 5

View of the burned headlamp switch and electrical conductor.



Photograph 6

View of the evidence collected.



November 22, 2016
RCG File No. 44301038

CVs



**GREGORY M. CLOER, C.F.I.
FIRE CONSULTANT**

Mr. Cloer is a Certified Fire Investigator (C.F.I.) by Georgia P.O.S.T., NPQ, N.F.A. and IAAI for fire/arson investigation, and is certified by Georgia P.O.S.T. as a basic peace officer. Mr. Cloer has also served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting & prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator. Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. Mr. Cloer has testified as an expert in criminal court related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certification, P.O.S.T. Basic and Advanced Arson Investigation (Currently Fire Investigator I and II)
Certification, P.O.S.T. Basic Peace Officer
N.F.A. Fire/Arson Investigation
P.O.S.T. Arson Investigator
IAAI-CFI
NPQ Certified Fire Investigator
NPQ Fire Instructor

TRAINING/CERTIFICATES

Certified Fire Investigator • Fire Instructor • Peace Officer • EMT • Paramedic • Advanced Fire Investigator • Advanced Fire Cause & Origin Expert Witness

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1986 – 2015	Cobb County Fire and Emergency Services

DETAILED PROFESSIONAL EXPERIENCE:

RIMKUS CONSULTING GROUP, INC.

2015 - PRESENT

Fire Consultant

Conduct fire, arson, and explosive investigations including residential, commercial, and vehicular losses for clients. Collect and preserve evidence ensuring a precise chain of custody. Conduct interviews with victims, property owners, witnesses, investigators, and pertinent third party organizations. Photograph scenes and prepare detailed written investigative reports as to the conclusions and opinions of the subject loss. Testify in related depositions and trials.



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
921 Eastwind Drive, Suite 110
Westerville, OH 43081
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

August 18, 2017

Re: RCG File No:

	53602733
LLV Number:	3318716
VMF Location:	435 South Saint Clair Street in Toledo, Ohio
Subject:	Preliminary/Final Report

Dear

On July 15, 2017, a fire occurred involving a US Postal Service vehicle located in the area of 3909 Wheatlands Road in Sylvania, Ohio. On July 21, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1994 Chevrolet LLV 3318716 with a vehicle identification number (VIN) of 1GBCS1048R2904913. On August 1, 2017, we conducted a fire origin and cause examination on the vehicle at Toledo Vehicle Maintenance Facility located at 435 South Saint Clair Street in Toledo, Ohio.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records, collected physical evidence, and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant William T. Spradlin, IAAI-CFI. A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated within the engine compartment of the involved LLV.
2. The specific area of origin was at the ignition coils on the lower right side of the engine compartment.
3. The specific ignition sequence and cause of the fire was determined to be an adverse electrical event at the ignition coils on the lower right side of the engine compartment. The ignition coils exhibited physical evidence consistent with adverse electrical activity.

Observations

Exterior Inspection:

For the purpose of this report, the left side of the vehicle refers to the mail side and the right side refers to the operator's side. There was severe fire damage to the exterior sides, top, and to the rear of the LLV. The engine hood and components were consumed by the fire. The windows and windshield were dislodged, consumed, or broken by the fire.

There was no evidence to indicate that the LLV had recently been involved in a collision. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured.

The aluminum cab, hood, and engine compartment were severely damaged, melted and collapsed from fire exposure. The fender wells were melted and collapsed. The roof was melted and collapsed. Fire damage patterns indicated the fire extended up from the engine compartment into the cab and throughout the engine compartment.

The cargo area roof and walls were intact. The rear cargo door was intact. All doors were observed in working order at the time of the fire. The driver side door was in the open position. The mail side door had been closed at the time of the fire. It showed damage indicating it was forced open during fire suppression. All four tires were intact with air. The front tires were blistered and damaged by radiant heat. Based on our exterior examination it was determined that the fire originated in the engine

compartment and progressed throughout the engine compartment and into the operator's compartment.

Interior Inspection:

The interior of the LLV was examined. The rear cargo compartment of the interior was observed with moderate fire damage that extended from the front of the vehicle into the cargo area. The front compartment was observed with severe fire damage and with mass loss to the dashboard area. The driver's seat was observed with severe fire damage, oxidation, and mass loss. There was no physical evidence observed on the interior of the LLV that would have caused or contributed to the cause of the fire. Fire damage patterns indicated the fire extended from the engine compartment into the operator's compartment into the rear cargo area.

Engine Compartment Inspection:

Examination of the engine compartment revealed severe fire damage throughout the compartment. The vehicle was equipped with a GM 2.2L, four-cylinder gasoline engine. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. The engine compartment sustained severe fire, heat, and smoke damage throughout. The damage was most severe on the right side of the engine compartment. The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been partially consumed. The melted remains of the fuse box from the mail compartment and the attached wiring harness were inspected. The wiring harness sustained fire and heat damage. The insulation had been consumed. The alternator sustained severe fire and heat damage. The insulation had been consumed from the conductors to the alternator. The main conductor was secure with no evidence of adverse electrical activity. The auxiliary conductor was secure.

The top of the battery case had sustained severe fire and heat damage. The conductors and terminals had become detached from the battery. The negative conductor was attached to the frame and to the block. The main positive conductor was attached to the starter. The insulation had been consumed but displayed no evidence of adverse electrical activity. The fuel rail was intact, but had sustained severe fire damage. The injectors sustained heat damage but were intact. The fuel lines had sustained severe fire damage but were intact. The power steering unit positioned at the left front of the engine sustained fire damage. The flexible return line and reservoir had

been consumed. The upper radiator hose sustained fire and heat damage. The flexible section of the vapor return line from the fuel tank to the canister mounted in the grill had been consumed. The canister had sustained fire and heat damage. The flexible section from the canister to the solenoid at the rear of the throttle body had been consumed. The starter was observed with external thermal damage only by the fire. The conductors were damaged, but no adverse electrical activity was observed. The insulation had been consumed on the conductors routed across the engine from the battery to the starter.

All combustible engine components including wire insulation, belts, and hoses were consumed by fire. The oil dipstick was checked and the level found to be within normal limits. The transmission dipstick was checked and found to be within normal limits. The radiator was severely damaged by heat so the coolant could not be checked. The power steering and brake fluid reservoirs were unable to be examined due to the severe fire damage.

The right front corner of the aluminum intake manifold was observed with severe fire damage and mass loss. Fire damage was more severe on the right side of the engine compartment. The ignition coils and ignition module on the lower right side of the engine block were severely damaged, melted and fused together. Based on analysis of the fire damage patterns inside the engine compartment, it was determined that this was the area of fire origin.

Undercarriage Inspection:

Examination of the undercarriage revealed no evidence of soot, smoke, heat or fire damage. The involved LLV was mounted on a GM frame. The fuel lines were positioned within the open frame routed to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. The fuel lines were routed above the transmission to the right side of the engine and observed with severe fire damage. The rubber sections of the fuel lines at the transmission were damaged and observed with mass loss. The top of the transmission sustained moderate fire damage.

Fuse Panel Inspection:

The fuse panel of the operator's compartment had fallen into the engine compartment and was observed with severe fire damage. Examination of the fuse panel revealed severe fire damage and mass loss to the panel and all of the fuses. Due to the severe

fire damage and mass loss, we were not able to determine if any were fuses were blown.

Area of Fire Origin:

Based on the observed patterns of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated at the ignition coils on the lower right side of the engine compartment. The first fuel ignited was combustible insulation materials of the ignition coils. The source of the fire's ignition was the adverse electrical event within the ignition coil.

Contributing Factors:

Age of the switch may have contributed to the failure of the ignition switch.

Interviews/Service Records:

On August 1, 2017, we conducted an interview with the VMF manager. He said the LLV had recently experienced problems starting and had been recently repaired. He provided the maintenance records for the past 12 months. A review of the records showed that the vehicle had a new ignition coil and new ignition module installed on July 14, 2017, the day before the fire occurred. Mr. provided an exemplar ignition coil from another LLV that they had recently found heat damaged. The plastic housing of the coil was swollen and cracked; it is our opinion this was from internal overheating. Mr. said they have seen similar problems and heat damaged ignition coils on other LLVs. He provided an exemplar new ignition coil for examination. He did not have the exact part number because they take them out of the box to store in their parts cabinet. He also provided a new exemplar ignition module for comparison. The ignition module is an AC Delco part number 19178833 and the supplier is Wheeler Brothers of Pennsylvania. Mr. stated he believes the ignition coils are also AC Delco manufacturer provided by Wheeler Brothers. He said it was the opinion of the VMF mechanics that the fire was caused by failure of the ignition coils.

On August 2, 2017, we conducted a telephone interview with mail carrier who was driving the LLV on the date of the fire. She stated that she normally drives this LLV and it had recent starter problems. She said it was in for service the day before the fire and had been repaired. She stated that she started the LLV and took a test drive around the block to be sure it was going to run okay. She then loaded her mail and left the post office at approximately 9:00 A.M. for her route. At approximately 1:00 P.M.,

she had stopped at a mailbox, and then shut the vehicle off to deliver a package to a house. She stated the LLV hesitated to start when she got back in. She stated that she continued her route and the LLV ran poorly, sputtered, and did not want to accelerate. She stated that she delivered three or four more mailboxes on that road when she smelled plastic burning. She then saw smoke coming from the hood and stopped the LLV. When she got out and looked underneath she saw fire dripping onto the roadway from the engine compartment. She evacuated the vehicle and called for help. She said prior to the fire, all systems were working normally; no alarms, noises, lights out, or issues.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Spradlin

William T. Spradlin, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

August 18, 2017
RCG File No. 53602733

Photograph 1

Front undercarriage in good condition.



Photograph 2

Rear undercarriage in good condition.



August 18, 2017
RCG File No. 53602733

Photograph 3
Front of LLV.



August 18, 2017
RCG File No. 53602733

Photograph 4
Driver compartment.



August 18, 2017
RCG File No. 53602733

Photograph 5
Rear of LLV.



Photograph 6
Mail side of LLV .



August 18, 2017
RCG File No. 53602733

Photograph 7
Cargo compartment.



Photograph 8
Engine compartment.



August 18, 2017
RCG File No. 53602733

Photograph 9

Melted remains of fuse panel in driver compartment .



Photograph 10

Fire damaged battery.



Photograph 11

Fire damaged ignition coils on driver side of engine block, area of fire origin.



Photograph 12

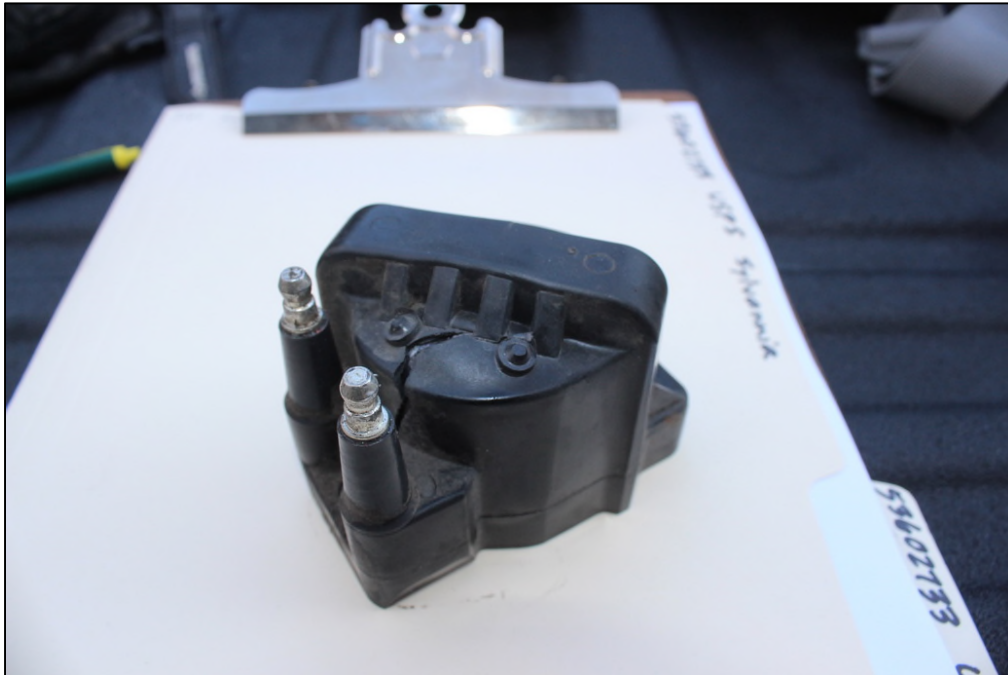
Exemplar new ignition coil.



August 18, 2017
RCG File No. 53602733

Photograph 13

Heat damaged ignition coil from another LLV repaired at the VMF.



August 18, 2017
RCG File No. 53602733

CVs



**WILLIAM TIMOTHY SPRADLIN, IAAI-CFI, CI, FIT, NAFI-CFEI
Fire Consultant**

Mr. Tim Spradlin has over 35 years' experience in firefighting, law enforcement, fire, arson and bombing investigation. His fire / explosion investigation work spans over 20 years of service, and he has three related college degrees. His career includes work as a full-time fire lieutenant, captain, deputy chief and fire chief in Xenia Township, Ohio. Mr. Spradlin also served as a reserve deputy sheriff with the Greene County Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He retired from 32 years public safety work as the Chief of the State of Ohio Fire Marshal's Fire – Explosion Investigation Bureau. From January 2008 until September 2014 Mr. Spradlin was the full-time chief fire / arson investigator for Ohio. He was also the curriculum manager / instructor for the Ohio Fire Academy fire investigation programs.

Mr. Spradlin also served in the United States Air Force, where he served 4 years active duty and 26 years reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant / First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the US Army in 2007 for combat meritorious service.

He currently serves as a police officer in the Village of Yellow Springs and as a volunteer fire training officer with the Xenia Township Fire Department in Ohio. Mr. Spradlin also teaches in the Clark State Community College fire programs and the Sinclair Community College Basic Police Officer Training Academy.

Mr. Spradlin is a certified fire investigator (CFI), fire investigation technician (FIT) and certified instructor (CI) by the International Association of Arson Investigators (IAAI). He is also a certified fire explosion investigator (CFEI) by the National Association of Fire Investigators (NAFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Bachelor of Science Degree in *Organizational Management* from Wilberforce University, Xenia, Ohio
Associates Degree in *Human Resource Management*, Air University CCAF, Gunter AFS, Alabama
Associates Degree in *Fire Science Technology*, Air University CCAF, Gunter AFS, Alabama
National Fire Academy *Arson Interview, Interrogation and Courtroom Testimony* course
National Fire Academy *Executive Analysis of Fire Operations in Emergency Management*
National Fire Academy *Executive Development* Program
National Fire Academy *Executive Planning* Program
Ohio Fire Academy *Basic Fire Investigation* and *Advanced Fire Investigation* programs
USAFR *Senior NCO Leadership Development Course*, Robins AFB, Georgia
Sinclair Community College Criminal Justice Academy, Dayton, Ohio

Member of the International Association of Arson Investigators (IAAI) and of the Ohio Chapter IAAI
Member of the National Association of Fire Investigators (NAFI)
Member of the National Society of Professional Insurance Investigators (NSPII)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
7501 South Quincy Street, Suite 160
Willowbrook, Illinois 60527
(866) 746-5871 Telephone
(630) 321-1847 Facsimile

February 8, 2018

Re: RCG File No: 50905354
LLV Number: 3318822
VMF Location: 341 West St. Paul Avenue, Milwaukee, Wisconsin
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 3318822, VIN 1GBCS1046R2904960. The vehicle was examined at the USPS Milwaukee Vehicle Maintenance Facility located at 341 West St. Paul Avenue in Milwaukee, Wisconsin. The fire incident reportedly occurred at 341 West St. Paul Avenue in Milwaukee, Wisconsin on January 11, 2018.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on January 24, 2018. Our work to complete this assignment was performed by Fire Consultant David A. Mager, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was at and around the rear cylinder head spark plug hole.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of the VMF mechanics removing the spark plugs from the cylinder

head. They cranked the engine to push out fuel (gasoline) from the cylinders of the engine. The number two spark plug wire sparked which ignited the gasoline vapors.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. There was extinguishing agent from an expelled fire extinguisher on the exterior surfaces at the front of the vehicle. There was smoke staining to the paint around the hood of the engine compartment. There was no other visible fire damage to the exterior of the vehicle. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

Examination of the interior of the vehicle revealed no visible fire damage. There was a light layer of extinguishing agent observed on the surfaces. There was a hose from the engine compartment on the mail tray. The hose had been removed by a mechanic and placed on the tray prior to the fire.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L 4 cylinder engine. The engine was fuel injected with 4 separate fuel injectors. The standard ignition for this engine was a high output ignition coil.

The battery for the vehicle was located at the front right side of the engine compartment. The battery, battery terminals, and battery cables were examined and found to be undamaged and intact; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid, and brake fluid were examined and observed to be within their normal operating range.

The engine compartment was covered with extinguishing agent from an expelled fire extinguisher. There was fire damage to the plastic corrugated tubing protecting the electrical conductors above the back of the engine. The spark plugs had been removed

from the engine block prior to the fire. There was fire damage to the area around the rear cylinder head opening for the spark plug.

The spark plug wires were lying loose in the engine compartment and were connected to the ignition. We examined the connections and identified fire damage inside the number two cylinder spark plug boot.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact.

Fuse Panel Inspection:

Examination of the fuse panel revealed no visible fire damage to the panel or any of the fuses. The plastic housing of the fuse panel was intact as were all of the fuses and connections.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated in the engine compartment at the rear cylinder head spark plug hole.

Potential Contributing Factors:

The LLV reportedly was being worked on at the time of the fire. The mechanics had removed the spark plugs from the cylinder head. The cranked the engine to push out fuel (gasoline) from the cylinders of the engine. The number 2 spark plug wire sparked which ignited the gasoline vapors.

A few days after the fire, a service bulletin was issued which stated the only safe way to perform this function was with the use of a remote starter button. The ignition circuit does not have a fuse to remove power from the ignition coil.

Evidence Collected:

No evidence was collected for laboratory examination.

Interviews:

In an interview with [redacted] from the Milwaukee VMF, [redacted] stated that the mechanic, [redacted] was working on the vehicle at the time of the fire. He was [redacted]

cranking over the engine to push out fuel from the cylinders when the fire started. The fire went up into the protective netting connected to the ceiling and melted portions of the netting but did not continue to burn. The fire was extinguished with an extinguisher.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no indications of recent service or repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Mager

David A. Mager, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

February 8, 2018
RCG File No. 50905354

Photograph 1

1994 LLV 3318822, VIN 1GBCS1046R2904960.



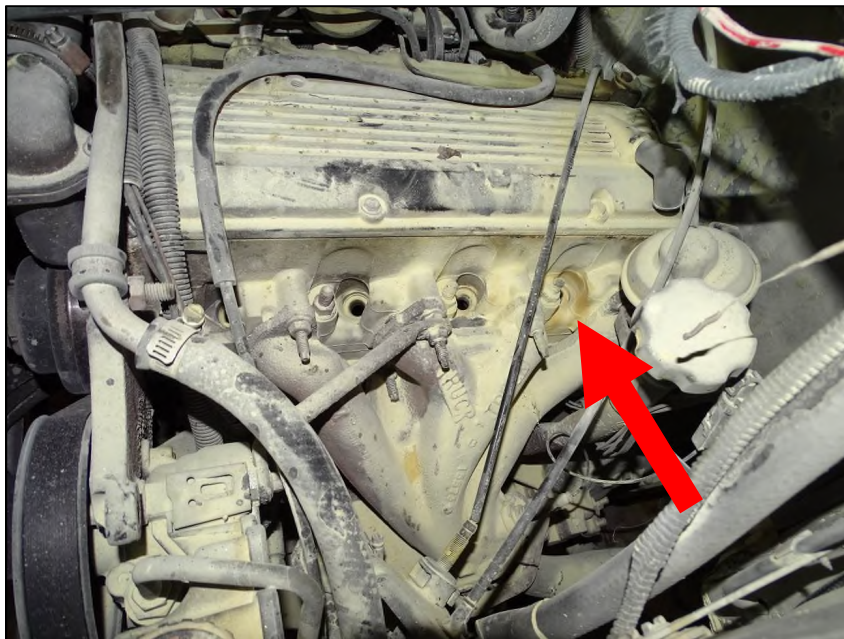
Photograph 2

Overall view of the engine compartment.



Photograph 3

Origin at the rear cylinder spark plug hole.



Photograph 4

Number 2 spark plug wire.



February 8, 2018
RCG File No. 50905354

CVs



DAVID A. MAGER, CFI FIRE CONSULTANT

Mr. Mager is an International Association of Arson Investigators Certified Fire Investigator, Illinois State Fire Marshall Office Certified Fire Investigator, Certified Fire Officer II, Hazardous Materials Technician "B" and a Illinois Department of Public Health Certified Paramedic.

Mr. Mager has an extensive professional background in the areas of firefighting and fire investigations, and has investigated over five hundred fires. His professional experience includes fire and explosion investigations, fire protection and detection system inspections as well as hazardous materials mitigations.

As an International Association of Arson Investigators Certified Instructor and a Certified Instructor II through the Illinois State Fire Marshall Office, Mr. Mager has conducted numerous live fire training exercises for Fire Fighters and Fire Investigators using authentic room furnishings as well as classes on fire behavior and evidence preservation.

Mr. Mager is a Retired Deputy Fire Chief and had been the Training Officer with the Midlothian, IL. Fire Department. He was an Assistant Team Leader for the Southwest Hazardous Materials Response Team and routinely responded to fire and hazardous materials incidents, fire investigations and conducted life safety inspections within the municipality.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator - Illinois State Fire Marshall Office
Certified Fire Investigator - International Association of Arson Investigators
Certified Instructor – International Association of Arson Investigators
Certified Fire Officer II – Illinois State Fire Marshall Office
Certified Hazardous Materials Technician "B" - Illinois State Fire Marshall Office
Certified Fire Department Incident Safety Officer – Illinois State Fire Marshall Office
International Association of Arson Investigators – Member
International Association of Arson Investigators (Illinois Chapter) – Member

EMPLOYMENT HISTORY

2008 – Present	Rimkus Consulting Group, Inc.
1987 – 2015	Midlothian Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2550 Corporate Exchange Drive, Suite 24
Columbus, OH 43231
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

March 22, 2016

Re: RCG File No: 53601786
LLV Number: 3319118
VMF Location: 1111 East 5th Street in Dayton, Ohio
Subject: Final Report

On January 11, 2016, a vehicle fire occurred at 520 North Hyatt Street in Tipp City, Ohio. On January 12, 2016, Rimkus Consulting Group, Inc. was retained to examine LLV 3319118, VIN 1GBCS1041R2905272.

On January 25, 2016, we conducted an examination of the vehicle at the USPS Vehicle Maintenance Facility located at 1111 East 5th Street in Dayton, Ohio. In the course of our work, we examined and documented the fire-damaged vehicle, interviewed personnel, and reviewed the local the fire department report. Our work to complete this assignment was performed by William Timothy Spradlin, IAAI-CFI, Fire Consultant. The report and case has been technically reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire & Explosion Investigations".

Conclusions

1. An effective fire pattern analysis and review of the remaining physical evidence indicated that the fire originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at and around the engine starter positive battery connecting wire.

3. The specific ignition sequence and cause of the fire was a failure of the positive cable to the LLV starter which ignited the plastic wire insulation and spread to available combustible materials in the area.

Observations

Exterior Inspection:

The exterior of the vehicle was mostly undamaged. We observed some light smoke staining on the left front fender and the left sliding door. We observed some blistered paint at the upper edge of the left front fender.

Interior Inspection:

We observed some light smoke staining on the left side of the dash inside the driver compartment. The remainder of the operator and cargo compartment was free of fire damage.

Engine Compartment Inspection:

We observed moderate smoke staining on the underside of the hood. We observed residue of dry chemical fire extinguisher agent throughout the engine compartment. We observed heat damage to the vinyl coating of the hood release cable. We observed heat damage to rubber and vinyl engine components low on the left side of the engine block. We observed heat damage to the cap on the engine oil dipstick. We observed the engine oil and transmission fluid levels were normal and there were no indicators of overheated fluids. Engine oil and transmission fluid levels were found to be within normal operating range.

We examined the underside of the engine where we observed residue of dry chemical fire extinguisher agent. We observed severe smoke staining and fire damage around the starter on the left lower side. We observed fire-damaged electric circuits at the starter. We observed fire damage on the left side of the oil pan and suspension yoke where oil residue had been on fire. The LLV was equipped with a GM fuel filter system. The fuel lines were intact and free of fire damage.

Undercarriage Inspection:

We observed that the frame was in good condition, with light smoke staining on the left front area. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

We observed the fuse panel was in good condition and undamaged. All fuses were the correct amperage per the recommendation.

Area of Fire Origin:

The area of fire origin was the lower left side of the engine, at the ignition circuit wiring connection on the starter (**Photograph #4**).

Contributing Factors:

An adverse electrical event occurred in the ignition circuit wire near the starter, igniting the wire insulation. Fire spread to the insulation on the positive battery cable, then ignited other rubber and vinyl components in the area, and ignited oil residue on the lower side of the oil pan and engine block.

Interviews:

We conducted a telephone interview with the Tipp City carrier. She stated that on the day of the fire, she started the vehicle to warm it up while she was loading mail for her route. She stated as she prepared to drive out of the post office lot, some other witnesses stopped her due to smoke coming from under the vehicle. She stopped the vehicle, shut it off, and got out. She stated she observed smoke from the left front wheel area and flames under the left side of the engine. She stated they used two portable fire extinguishers to extinguish the fire.

We conducted an interview with the Dayton VMF supervisor. He stated that after the fire occurred, he was told by the Tipp City staff that the vehicle had ignition problems. He was told the starter would not disengage after starting the engine and that carriers would turn the key back or remove it to stop the starter from operating. He stated this information was not provided to the VMF until after the fire.

Evidence Collected:

The vehicle starter along with the ignition wiring circuit and positive battery cable were collected as evidence. Evidence was examined in the lab and confirmed that an adverse electrical event occurred and was the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Spradlin

William T. Spradlin, BS, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 22, 2016
RCG File No. 53601786

Photograph 1

Left side of vehicle with smoke stain on fender and door.



Photograph 2

Left front fender well with smoke stain and blistered paint.



March 22, 2016
RCG File No. 53601786

Photograph 3

Underside of engine with smoke stain and fire damage to left side.



Photograph 4

Left underside of the engine, area of fire origin at the starter.



March 22, 2016
RCG File No. 53601786

CVs



**WILLIAM TIMOTHY SPRADLIN, IAAI-CFI, CI, FIT, NAFI-CFEI
Fire Consultant**

Mr. Tim Spradlin has over 35 years' experience in firefighting, law enforcement, fire, arson and bombing investigation. His fire / explosion investigation work spans over 20 years of service, and he has three related college degrees. His career includes work as a full-time fire lieutenant, captain, deputy chief and fire chief in Xenia Township, Ohio. Mr. Spradlin also served as a reserve deputy sheriff with the Greene County Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He retired from 32 years public safety work as the Chief of the State of Ohio Fire Marshal's Fire – Explosion Investigation Bureau. From January 2008 until September 2014 Mr. Spradlin was the full-time chief fire / arson investigator for Ohio. He was also the curriculum manager / instructor for the Ohio Fire Academy fire investigation programs.

Mr. Spradlin also served in the United States Air Force, where he served 4 years active duty and 26 years reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant / First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the US Army in 2007 for combat meritorious service.

He currently serves as a police officer in the Village of Yellow Springs and as a volunteer fire training officer with the Xenia Township Fire Department in Ohio. Mr. Spradlin also teaches in the Clark State Community College fire programs and the Sinclair Community College Basic Police Officer Training Academy.

Mr. Spradlin is a certified fire investigator (CFI), fire investigation technician (FIT) and certified instructor (CI) by the International Association of Arson Investigators (IAAI). He is also a certified fire explosion investigator (CFEI) by the National Association of Fire Investigators (NAFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Bachelor of Science Degree in *Organizational Management* from Wilberforce University, Xenia, Ohio
Associates Degree in *Human Resource Management*, Air University CCAF, Gunter AFS, Alabama
Associates Degree in *Fire Science Technology*, Air University CCAF, Gunter AFS, Alabama
National Fire Academy *Arson Interview, Interrogation and Courtroom Testimony* course
National Fire Academy *Executive Analysis of Fire Operations in Emergency Management*
National Fire Academy *Executive Development* Program
National Fire Academy *Executive Planning* Program
Ohio Fire Academy *Basic Fire Investigation* and *Advanced Fire Investigation* programs
USAFR *Senior NCO Leadership Development Course*, Robins AFB, Georgia
Sinclair Community College Criminal Justice Academy, Dayton, Ohio

Member of the International Association of Arson Investigators (IAAI) and of the Ohio Chapter IAAI
Member of the National Association of Fire Investigators (NAFI)
Member of the National Society of Professional Insurance Investigators (NSPII)



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
9125 Guilford Road, Suite 108
Columbia, Maryland 21046
Telephone: (410) 872-9000

February 11, 2020

Re: RCG File No: 100023256
LLV Number: 3319231
VMF Location: 22363 Randolph Drive Sterling, Virginia
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was requested to examine the vehicle fire loss involving USPS LLV 3319231 with VIN 1GBCS1045R2905498 that occurred on December 28, 2019, reportedly while the vehicle operating in Chantilly, Virginia. A specific location of the incident was not provided. In the course of our work, we examined and documented the fire-damaged vehicle on January 14, 2020 and interviewed the carrier on January 15, 2020.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 22363 Randolph Drive in Sterling, Virginia. We obtained and reviewed VinLink Record, maintenance and repair orders, and recalls and defects. The work to complete this assignment was performed by Fire Consultant Charles W. Feeley, IAAI-CFI. This report was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the left side of the engine in the area of the exhaust manifold.
3. The specific ignition sequence and cause of the fire was inconclusive, however a possible leak of the power steering pump hose onto the exhaust manifold could not be eliminated as a possible fire cause. An unidentified electrical event involving the main conductors from the battery could not be eliminated due to the lack of remaining physical evidence.

Observations

Exterior Inspection:

The exterior front of the vehicle sustained fire, heat and smoke damage. The front panel above the grill and headlight assemblies had been consumed. The hood, front support posts and front windshield had been consumed. The hood had been consumed. The headlight assemblies had become dislodged and fire damaged. The left corner of the bumper was gone. The exterior left passenger side sustained fire and heat damage from the front bumper to the leading edge of the sliding door.

The front fender had been consumed above the engine and the rear portion of the left wheel and tire. The door had sustained fire damage to the leading edge. The exterior rear sustained smoke damage to roll up door and roof above the roll up door. The exterior right driver side sustained fire damage from the front bumper to the leading edge of the driver door. The front fender had been partially consumed above the right front wheel and tire. The roof had been consumed in the center above the passenger compartment. The roof was intact above the cargo area.

Interior Inspection:

The interior compartment sustained fire and heat damage throughout. The combustible materials of the seat had been consumed. The dashboard had been consumed by the fire. The insulation of the wiring harness in the dashboard had been consumed. The front bulkhead had been consumed. The fuse block located on the right side of the interior compartment had fallen into the engine compartment and was too severely damaged by the fire to be evaluated. The steering column had collapsed.

The ignition was too severely damaged to be evaluated. The bulkhead between the interior compartment and the cargo area had sustained heat and smoke damage. The

rear cargo area sustained smoke damage throughout. The contents of the cargo area had been removed prior to our inspection.

Engine Compartment Inspection:

The damage was most severe on the left side of the engine compartment. The power steering unit sustained severe fire damage. The flexible lines and reservoir had been consumed. The manifold positioned to the rear of the power steering pump displayed staining consistent with an ignitable liquid spraying or leaking onto a hot surface. The upper radiator hose on the left side of the engine compartment had been consumed. The serpentine belt had been consumed. The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been consumed.

The melted remains of the fuse box from the interior compartment and the attached wiring harness were inspected. The wiring harness sustained severe fire and heat damage. The insulation had been consumed. The fuel line was intact. The fuel rail was intact. The return line was undamaged. The ignition module and the two ignition coils positioned on the right side of the engine block had sustained heat damage due to exposure. The vehicle was equipped with a 2.2 liter four-cylinder engine with standard ignition coil.

Undercarriage Inspection:

Examination of the rear undercarriage revealed no evidence of soot, smoke, heat or fire damage. The undercarriage in the area of the engine sustained fire and heat damage. The involved LLV was mounted on a GM frame. The fuel lines were positioned within the open frame to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. They were routed above the transmission to the right side of the engine. The rubber sections of the fuel lines at the transmission were intact. The top of the transmission sustained heat damage from the engine compartment.

Fuse Panel Inspection:

The fuse panel of the interior compartment which had fallen into the engine compartment was too severely damaged to evaluate.

Area of Fire Origin:

The area of origin was determined to be the left side of the engine compartment. The specific area of origin was determined to be at or near the power steering pump.

Potential Contributing Factors:

A possible leak of the power steering pump hose onto the exhaust manifold could not be eliminated as a possible fire cause. An unidentified electrical event involving the main

conductors from the battery could not be eliminated due to the lack of remaining physical evidence.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interview:

The carrier and vehicle driver was interviewed on January 14, 2020 and provided the following information:

- He arrived at work at approximately 7:30 A.M. He operated the involved vehicle every day. He had no reported problems with the vehicle.
- While driving on the public highway, he saw smoke coming from the engine compartment. The smoke began to get thick so he pulled over to the side of the road and called 911. He was able to remove the mail from the cargo area of the truck.

Service Records:

A review of the service records did not indicate any recent work that may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles W. Feeley

Charles W. Feeley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1

A view of the exterior front of the vehicle.



Photograph 2

A view of the exterior left side of the vehicle.



Photograph 3

A view of the exterior rear of the vehicle.



Photograph 4

A view of the exterior right side of the vehicle.



Photograph 5

A view of the cargo area of the vehicle.



Photograph 6

A view of the passenger compartment of the vehicle.



Photograph 7

A view of the fuse box.



Photograph 8

A view of the battery.



Photograph 9

A view of the rear undercarriage.



Photograph 10

A view of the fuel lines at the transmission.



Photograph 11

A view of the engine compartment.



Photograph 12

A view of the ignition modules and coils.



Photograph 13

A view of the severed main ground conductor.



Photograph 14

A view of the severed conductor at the starter.



Photograph 15
A view of the starter.



Photograph 16
A view of the power steering pump and stained exhaust manifold.



February 11, 2020
Rinkus File No. 100023256

Curriculum Vitae



Charles W. Feeley, CFEI, CFI

Fire Consultant
Fire Division

Background

Mr. Feeley is a Certified Fire and Explosion Investigator and Certified Fire Investigator. He is a Licensed Private Investigator in Delaware, New York, Pennsylvania, Virginia and West Virginia, and holds Certified Asbestos Awareness in Maryland. He was a member of the Baltimore City Fire Dept. for 35 years where he was involved in many different emergency positions including Firefighter, Lieutenant, Captain, Chief Safety Officer, Battalion Commander and Division Chief. Mr. Feeley has completed numerous educational seminars and continuing educational courses.

Mr. Feeley investigated over 550 fires in four years as an investigator and in excess of 5,000 fires as an incident commander at fire scenes. He has given expert testimony in civil and criminal court cases. He supervised the Office of the Fire Marshal in Baltimore City. He also supervised special projects such as the Arson Task Force, juvenile fire setters program, an educational intervention program and public education programs.

At Rimkus Consulting Group, Mr. Feeley has conducted over 1050 fire origin and cause determinations that include, but are not limited to, assignments involving residential, commercial, industrial, passenger and commercial vehicles, marine, farm implement/equipment, appliance and electrical equipment related fires.

Mr. Feeley has been recognized for his achievements by being the recipient of awards that include Distinguished Unit Citation, Meritorious Conduct Award, Exemplary Performance, and Distinguished Service Award.

Contact Information

(410) 872-9000
cwfeeley@rimkus.com

9125 Guilford Road,
Suite 108
Columbia, MD 21046



Rimkus Consulting Group, Inc.
7851 Woodland Center Boulevard
Tampa, FL 33614
(800) 498-3060 Telephone
(813) 289-5440 Facsimile
Certificate of Authorization No. 8301

September 20, 2016

Re: RCG File No: 41115965
LLV Number: 3319317
VMF Location: 2800 Lakeland Hills Boulevard in Lakeland, Florida
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 3319317, VIN 1GBCS1044R2905444. The vehicle was examined at the USPS Lakeland VMF located at 2800 Lakeland Hills Boulevard in Lakeland, Florida. The fire incident occurred on July 29, 2016.

In the course of our work, we examined and documented the fire damaged vehicle on August 11, 2016. Our work to complete this assignment was performed by Fire Consultant, Mr. William T. Schorn, IAAI-CFI. This report and case was reviewed by Mr. Jack R. Kennedy III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the positive battery cable routed through the area of fire origin on the driver's side of the engine compartment.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of the involved battery cable potentially sustaining mechanical damage at the position where it transversed the brackets, which caused the insulation to become chaffed over time and caused the conductor to come into contact with the metal bracket which caused an adverse electrical event.

Observations

Exterior Inspection:

Examination of the vehicle began at the rear of the vehicle and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The roof above the operator compartment had been consumed during the fire event. The driver sliding door was intact, but the mail side door had been consumed during the fire progression. The cargo compartment roof was mostly consumed by fire while the rear and passenger exterior walls suffered severe fire damage. The driver side exterior wall was intact.

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments, revealed severe fire damage. An analysis of the fire patterns in this area indicated that the fire extended into this area from the engine compartment and did not originate on the interior.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. We observed severe fire damage to the engine compartment including all combustibles within the engine compartment. We were able to detect an acceptable level of oil on the dipstick. We were unable to examine either the transmission fluid level or power steering due to the severe fire damage in the engine compartment. The battery and fuse panel suffered severe fire damage.

While examining the battery cables, we observed arcing to one of the cables. We were unable to determine if it was the positive or negative cable because of the severe fire damage to the battery. The plastic insulation on the battery cable had been consumed by fire and while examining the brackets, we observed arc damage to both of the brackets used to secure the cable.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of fire damage along the bottom side of the engine as well as the sides of the engine. The involved LLV was mounted on a GM frame. The fuel lines were examined and it appeared the lines had failed during the fire progression. The fuel tank was examined and the vehicle fuel filter system was equipped with a GM filter. Both were free of fire damage. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage. We were unable to determine the status of the fuses.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment. The specific area of origin was at and around a battery cable routed through the area of fire origin that sustained severe adverse electrical damage.

Contributing Factors:

The involved battery cable potentially sustained mechanical damage at the position where it transversed the brackets, which caused the insulation to become chaffed over time and caused the conductor to come into contact with the metal bracket causing an adverse electrical event.

Evidence Collected:

One of the battery cables along with two brackets holding the cable in place were collected during the inspection.

The collected evidence had adverse electrical activity that was consistent with the cause of the fire.

Interviews:

On August 1, 2016, we interviewed at the Lakeland, Florida VMF. We learned the carrier had attempted to accelerate the vehicle after delivering mail to a CPU and the vehicle didn't accelerate. The carrier noticed black smoke coming from underneath the hood. The carrier turned off the LLV and exited the vehicle. We also learned the carrier had recorded the incident on his cellular telephone. He said as he exited the vehicle, he observed possible transmission fluid leaking onto the ground from the engine compartment.

The VMF said the engine for the vehicle had originally been replaced in March of 2016 and had to be replaced a second time in June of 2016. He said the engine was under warranty. They said they didn't have any further problems with the vehicle until the fire.

We were able to make contact with the carrier on August 15, 2016, and spoke with him by telephone. He said after delivering mail, he got back into the LLV and released the emergency brake. He attempted to accelerate the vehicle, but he found the gas pedal loose like it was broken. He turned the vehicle off and observed black smoke from the dashboard. He said he also had a similar incident on June 18, 2016, in which smoke also came from the dashboard, but said the vehicle didn't catch on fire.

A "sub" whom works 3 to 4 days a week said, whenever he works route 78, he uses this vehicle. He said he started working on the day of the fire at 8:00 A.M. and said the fire occurred at approximately 2:15 P.M. He said he didn't know why the vehicle caught on fire. He said he started working at the Post Office in November of 2015.

Service Records:

A review of the service history for the involved LLV indicated that on March 29, 2016, a large repair was complete labeled "engine" with no detail as to what was performed. This could have possibly been an engine replacement. On June 20, 2016, a work order was created that indicated "engine warranty" work was performed with no detail as to what was completed. These repairs could have caused or contributed to the cause of the fire as the positive cable was not properly reinstalled and secured. There were no other entries that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Schorn

William T. Schorn, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

September 20, 2016
RCG File No. 41115965

Photograph 1

A view of the driver side of LLV 3319317.



Photograph 2

A view of the passenger side of LLV 3319317.



September 20, 2016
RCG File No. 41115965

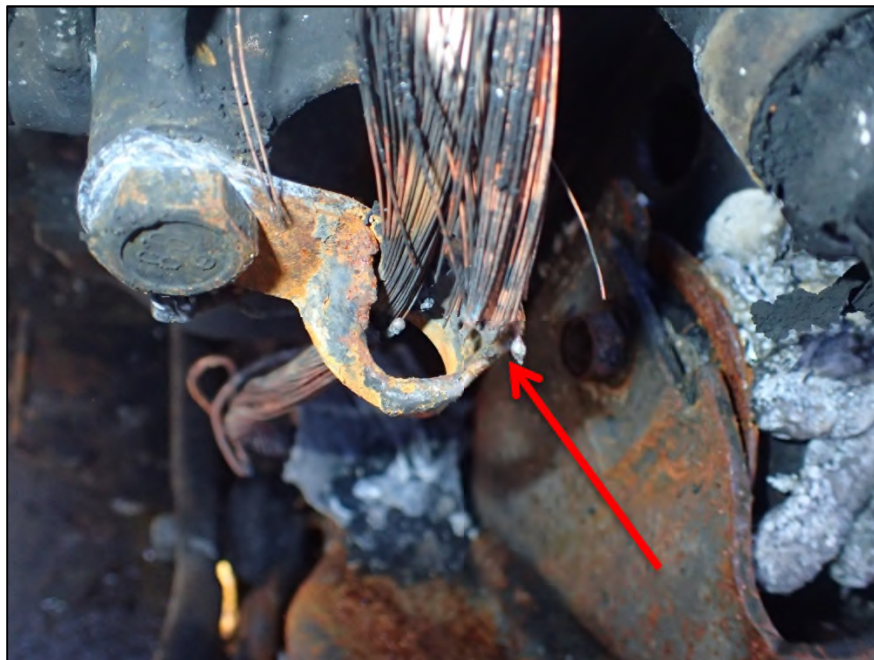
Photograph 3

A view of the battery cable.



Photograph 4

A view of one of the arcs in the battery cable.



September 20, 2016
RCG File No. 41115965

Photograph 5

A view of the evidence collected showing arcing in two brackets holding the battery cable.



September 20, 2016
RCG File No. 41115965

CVs



WILLIAM SCHORN, I.A.A.I., C.F.I., C.F.E.I., C.V.F.I. FIRE CONSULTANT

Mr. Schorn attended the University of South Florida majoring in Criminal Justice. Mr. Schorn's professional career includes over 30 years with the St. Petersburg Police Department. During his tenure with the police department, he was a Patrolman, Field Training Officer, Surveillance Detective, and Auto Theft Detective. For his last 19 years, he was assigned to the fire department to conduct fire investigations. In addition to the latent investigation, he also conducted the origin and cause investigations. Mr. Schorn was also the lead fire investigator for the City of St. Petersburg from 2006 until his retirement.

Mr. Schorn is a Certified Fire Investigator with the International Association of Arson Investigators, as well as a Certified Fire and Explosive Investigator and Certified Vehicle Fire Investigator with the National Association of Fire Investigators. He has been rendered an expert regarding fire investigations in criminal court. As the arson investigator assigned to the fire department, he assisted conducting the fire origin and cause investigation, as well as the criminal investigations. During the 19 years he was assigned to the fire department, he conducted approximately 1936 fire investigations. Since 2005, he has conducted approximately 493 origin and cause investigations, in which approximately 168 cases have been determined to be incendiary. Mr. Schorn also holds a private investigator license in the state of Florida (PI License number C1400618).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Law Enforcement Certification - Saint Petersburg Junior College (1984)
Criminal Justice – St. Pete College/University of South Florida (1980 -1984)
Professional Arson Co-Op of Florida
Florida Advisory Committee on Fire Prevention (FACAP)
International Association of Arson Investigators
International Association of Arson Investigators (FL Chapter)
National Association of Fire Investigators
Certified Fire and Explosive Investigator - National Association of Fire Investigators (2002)
Certified Fire Investigator - International Association of Arson Investigators (2009)
Certified Vehicle Fire Investigator (2013)

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1984 – 2015	Saint Petersburg Police Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
92 South Street
Hopkinton, MA 01748
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

August 4, 2017

Re: RCG File No:

LLV Number: 44803268
Vehicle Location: 3319593
Subject: 1489 Main Street in Brockton, Massachusetts
Preliminary/Final Report

Dear

On June 28, 2017, a fire occurred in a US Postal Service vehicle at 1 Winding Way in Rockland, Massachusetts. On July 7, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1993 Grumman LLV 3319593. On July 12, 2017, we conducted a fire origin and cause examination of the vehicle at Bob's Auto Body and Services at 1489 Main Street in Brockton, Massachusetts.

In the course of our work, we interviewed the mail carrier, examined the vehicle, and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Scott S. Popovich, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator's compartment of the involved LLV.

2. The specific area of fire origin was determined to be at the rheostat headlamp switch positioned in the left side of the dashboard.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side.

We observed movement and intensity fire patterns on the front of the vehicle indicating a fire originating in the mail side compartment. The windshield was mostly broken out and in pieces on the interior floor due to thermal conditions. The window glasses in the small triangular windows near the windshield were thermally damaged and missing. A movement and intensity fire pattern was observed on the fender below the "A" post on the driver's side, the fender was consumed in this area. The roof above the dash had been consumed by the fire. The engine hood of the vehicle was present and we did not observe any discoloration. The glass in the driver's side sliding door was missing. The rear slide up cargo door was fire damaged indicating it was in the open position during the fire. The LLV number was verified from markings by the rear cargo door. All four tires were intact and inflated. There was no evidence to indicate that the LLV had recently been involved in a collision. Movement and intensity fire patterns on the outside of the vehicle indicated a fire originating at the operator's compartment of the vehicle.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred in and around the dashboard area on the driver's side. The majority of the combustible materials in and around the dashboard area had been consumed during the fire. The fire damage progressed from the interior to the cargo area of the LLV. Burned remains of the headlamp switch assembly were recovered from the dash area.

Engine Compartment Inspection:

The engine compartment was examined. Some heat damage was observed in the underside of the hood in the area of the driver's compartment. The bulk head between the mail side and engine compartment was partially consumed by the fire. The

conductors at the back of the engine compartment were missing insulation. The fuel system was examined and found to be intact and observed with no fire damage. The battery for the vehicle was located at the front right side of the engine compartment and had no fire damage. The engine compartment was eliminated as an origin of the fire.

Undercarriage Inspection:

The undercarriage was examined. The involved LLV was mounted on a GM frame. The frame rail components were undamaged. The associated fuel lines and filter system were intact and free of damage. The under carriage was eliminated as the origin of the fire.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage and was consumed. The fire damage observed was a result of the fuse panel being exposed to the fire.

Area of Fire Origin:

Based on our observations and witness statements, it was determined that the area of fire origin was in the driver's compartment on the left side of the steering column at the headlight switch.

Contributing Factors:

Issues with the headlamp switch in the area of origin could not be eliminated. The involved components were collected and sent to Technical Fire Manager David R. Meyers, IAAI-CFI in the Charlotte, North Carolina office for analysis. An examination of the artifacts was conducted by Mr. Mark H. Nelson, P.E. The rheostat headlight switch could not be eliminated as a cause of the fire.

Evidence Collected:

Item A: Headlamp Switch

Item B: Small metal box

Item C: Misc. Items from LLV floor by the dashboard

Interview:

A telephone interview was conducted with the carrier/driver of the vehicle. Ms. reported the following information:

- She was on her usual route number 13.
- There were no problems with the LLV.
- She was pulling into a park stop and saw smoke coming from the vehicle.
- She called her supervisor and they brought out a replacement LLV to finish the route.
- While at the back of the vehicle moving mail, she looked up and saw flames at the light switch on the dash. There was no extinguisher on the vehicle.
- The LLV does leak water when it rains and collects on the dash.

Service Records:

Multiple attempts were made to obtain the service records of the vehicle from the VMF Manager. The records have not been received for review at this time of this report.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Scott S. Popovich

Scott S. Popovich, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 4, 2017
RCG File No. 44803268

Photograph 1
Front of the LLV.



Photograph 2
Driver's side of the LLV.



August 4, 2017
RCG File No. 44803268

Photograph 3
Rear of the LLV.



Photograph 4
Mail side of the LLV.



August 4, 2017
RCG File No. 44803268

Photograph 5
Interior of the LLV.

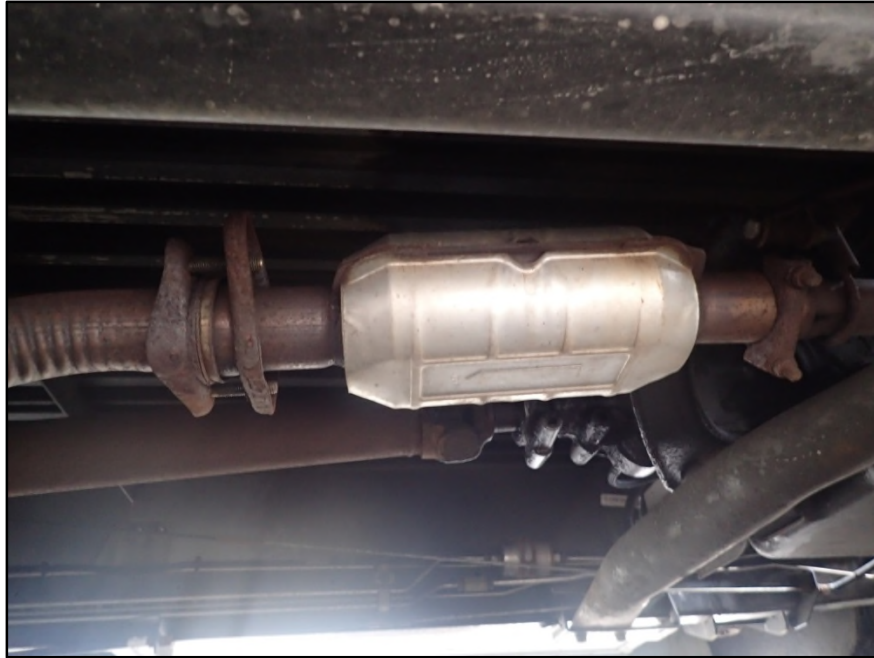


Photograph 6
Engine Compartment of the LLV.



August 4, 2017
RCG File No. 44803268

Photograph 7
Undercarriage of the LLV.



Photograph 8
Dash Board of the LLV.



August 4, 2017
RCG File No. 44803268

Photograph 8
Light switch from LLV.



August 4, 2017
RCG File No. 44803268

CVs



SCOTT S. POPOVICH, CFPS, CFEI, CVFI, FIT FIRE CONSULTANT

Mr. Popovich's professional career includes 25 years with the Woonsocket Fire Department in the city of Woonsocket, RI. In that capacity he has been involved in many different emergency services including Deputy Director of Emergency Management, Assistant Fire Marshal, Lieutenant and Firefighter. As a licensed state of Rhode Island Assistant Deputy State Fire Marshal his duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Popovich has a Master of Science in Fire and Arson Investigation from the University of New Haven with a heavy concentration in forensics and a Bachelor of Science in Public Administration from Roger Williams University. He maintains certifications as a fire investigator and fire inspector and has attended numerous classes at the National Fire Academy and the Rhode Island State Crime Laboratory.

Mr. Popovich was recently recognized for project development for the planning and execution of Emergency Response Training for CVS Corporate Headquarters in Woonsocket, Rhode Island.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

M.S. – Fire and Arson Investigation – University of New Haven, Connecticut
B.S. – Public Administration – Roger Williams University, Rhode Island
A.S. – Fire Science – Community College of Rhode Island

Licenses and Certifications

Fire Investigative Technician (FIT) by the International Association of Arson Investigators
Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) by the National Association of Fire Investigators
Certified Fire Protection Specialist (CFPS) by the National Fire Protection Association
Certified Fire Inspector (CFI) by the National Fire Protection Association
Certified Evidence Collection Technician (ECT) by the International Association of Arson Investigators
Licensed Emergency Medical Technician by the State of Rhode Island
Licensed Oil Heat Technician
Licensed Hoisting Equipment Operator by the State of Rhode Island
Licensed Private Detective in the State of Rhode Island

Professional Memberships

IAAI (International Association of Arson Investigators)
RIIAAI (Rhode Island Chapter of International Association of Arson Investigators) Board Member



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
921 Eastwind Drive, Suite 110
Westerville, OH 43081
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

January 10, 2017

Re: RCG File No:

LLV Number: 53602307
VMF Location: 3315420
Subject: 1591 Dalton Avenue in Cincinnati, Ohio
Preliminary/Final Report

Dear

On November 16, 2016, a vehicle fire reportedly occurred at the United States Post Office located at 101 South Main Street in Crittenden, Kentucky. The vehicle involved was a 1993 Grumman LLV.

Rimkus Consulting Group, Inc. was retained to examine LLV 3315420, VIN 1GBCS1041R2901688. Our inspection took place at the CMF located at 1591 Dalton Avenue in Cincinnati, Ohio. In the course of our work, we examined and documented the fire damaged vehicle with digital photographs. Our work to complete this assignment was performed on December 2, 2016, by Fire Consultant, Kevin Dunn, IAAI-CFI. This report and case were reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921—"Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at and around the area of the transmission and the exhaust manifold.

3. The specific ignition sequence and cause of the fire was determined to be a direct result of leaking transmission fluid being ignited on the hot operating exhaust manifold within the engine compartment. Due to the severity of the fire damage, the exact location of the leak could not be conclusively determined.

Observations

Exterior Inspection:

We observed direct fire damage within the engine and passenger compartments of the vehicle. Fire patterns were consistent with the fire having originated at the undercarriage beneath the engine compartment and extending into the passenger compartment. The vehicle was equipped with Goodyear Wrangler tires that were in good condition. Both front tires were fire damaged and had lost inflation. Both rear tires were still inflated.

Interior Inspection:

During the examination of the interior of the involved LLV, we observed severe direct fire damage within the operator compartment. The dashboard, driver seat, and mail carrier tray had been consumed by the fire. The fire extended from the operator compartment into the cargo area. The fire damage in this area was determined to have been caused by fire extension from the engine compartment. There was no physical evidence observed that would indicate that the fire originated in the interior of the LLV.

Engine Compartment Inspection:

During the examination of the engine compartment, we observed severe fire damage throughout the engine compartment. The most severe direct fire damage was observed on the mail side of the engine compartment. Fire patterns present on the radiator were consistent with the fire having extended from the left to the right side of the engine compartment. The engine compartment was determined to be the area of fire origin. Fire pattern analysis indicated that the fire originated in the area of the transmission and the exhaust system. An examination of the electrical conductors in the area of origin did not show any physical evidence of adverse electrical activity. The LLV was equipped with a GM fuel filter system. The LLV was also equipped with an AGI ignition distributor.

Undercarriage Inspection:

We observed localized fire damage beneath the engine compartment of the vehicle. The fuel lines, which extended along the left side of the vehicle, were still intact and undamaged by fire. The oil pan drain plug and oil filter were both present and did not exhibit evidence of having leaked. We observed the presence of dirt/debris adhered to

the exterior of the transmission. The presence of this dirt/debris was consistent with a fluid leak having been present within this area. This fluid leak permitted the dirt/debris to adhere to the transmission. We observed the presence of transmission fluid on multiple components of the undercarriage. The presence of transmission fluid extended along the undercarriage to the rear of the vehicle. Transmission fluid was determined to have leaked on the hot operating components of the exhaust system which was the area of fire origin.

Fuse Panel Inspection:

The fuse panel was consumed by the fire and could not be inspected.

Area of Fire Origin:

We observed fire patterns that were consistent with the fire having originated beneath the engine compartment of the vehicle. The specific area of fire origin was located on the left side of the transmission at the location of the head pipe.

Contributing Factors:

The evidence observed is consistent with a transmission fluid leak. The most probable cause for the fire was the ignition of leaking transmission fluid vapor by a competent ignition source. The competent ignition sources in the area of origin would have been the hot surfaces of an engine component. Due to the extent of fire damage, the specific location of the transmission fluid leak could not be determined.

Evidence Collected:

There was no physical evidence collected.

Interviews:

An interview was conducted with the mail carrier on December 28, 2016, who was operating the vehicle at the time of the fire. Mr. informed us that that he had been on his assigned route for approximately two and one-half hours when he began to smell an odor that he described as "burning plastic". He advised that the vehicle then had difficulty in shifting from first to second gear and described the difficulty as the vehicle "hopped". He stated that he notified his manager of these issues by telephone and was informed to continue on his route and then return to the post office. Mr. informed us that he continued on his route for approximately thirty minutes to one hour and then returned to the post office in Crittenden, Kentucky. He advised that upon attempting to place the vehicle in reverse to park, the vehicle would not shift into reverse. He advised that he then exited the vehicle and observed a fire on the ground beneath the engine compartment. He stated that he obtained a fire

extinguisher from the post office and utilized it in an attempt to extinguish the fire. He advised that he was unsuccessful in extinguishing the fire and that another post office employee reported the fire to 911. Mr. informed us that he had observed smoke emanating from the exhaust pipe but there had been no smoke or indications of a fire within the passenger compartment.

Service Records:

A review of the service records for the involved LLV was conducted. There was no indication of any recent repairs or service work that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Kevin Dunn

Kevin Dunn, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

January 10, 2017
RCG File No. 53602307

Photograph 1

Overview of the left side of the vehicle.



Photograph 2

Overview of the right side of the vehicle.



January 10, 2017
RCG File No. 53602307

Photograph 3

Overview of the rear and cargo area.



Photograph 4

Overview of the engine and passenger compartments.



Photograph 5

Overview of the undamaged fuel lines.



Photograph 6

Overview of the dirt/debris adhered to the transmission.



January 10, 2017
RCG File No. 53602307

Photograph 7

Overview of the area of fire origin.



Photograph 8

Overview of the area of fire origin.



January 10, 2017
RCG File No. 53602307

CVs



**PATRICK M. DUNN, CFI
FIRE CONSULTANT**

Mr. Dunn has been a Fire Investigator in the Insurance Industry for 22 years, with over a thousand fire scene investigations. He is an Illinois State Certified Arson Investigator. He is a Certified Fire Investigator through the International Association of Arson Investigators. He has completed the Fire and Arson Investigation Course at the Illinois Fire Service Institute. He has also completed the Arson Investigative Techniques Training with the Bureau of Alcohol, Tobacco and Firearms.

Mr. Dunn's areas of expertise include both structural and vehicular fires. He has conducted several room size fires as training aides for firefighters, fire investigators and police investigators using authentic room furnishings. Many ignition scenarios were used on combustibles, from flammable liquid to small explosions. Similar techniques were used in the training of vehicular fires. Mr. Dunn has been qualified an expert in vehicular fires by the Court in Lake County, Illinois.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigation, International Association of Arson Investigators
Fire and Arson Investigation, Illinois Fire Service Institute, 1990 and 1995
Certified Arson Investigator- Illinois
Licensed Private Investigator – Wisconsin (Lic. #11311-63)
Licensed Private Investigator – Minnesota (Lic. #1035)
Member: International Association of Arson Investigators
International Association of Arson Investigators, Wisconsin Chapter

EMPLOYMENT HISTORY

2006 - Present	Rimkus Consulting Group, Inc.
1984 - 2006	American Family Insurance Co.
1972 - 1984	Lake County, IL Sheriff's Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
13900 Alton Parkway, Suite 123
Irvine, California 92618
Telephone: (877) 978-2044
Certificate of Authorization No. 44071

May 21, 2019

Re: RCG File No: 100000224
LLV Number: 4300500
VMF Location: 701 N. Loara Street Anaheim, California
Subject: Preliminary/Final Report

Dear

On April 10, 2019, a fire occurred involving US Postal Service vehicle LLV 4300500. The loss location was reported to be 763 S. Main Street in Orange, California. LLV 4300500 was examined at the VMF located at 701 N. Loara Street in Anaheim, California.

Rimkus Consulting Group, Inc. was retained to examine 1994 LLV 4300500, VIN 1GBCS1049R2906461 to determine the cause of the fire. On April 24, 2019, we conducted an examination of the fire damaged LLV, interviewed the carrier/driver Mr. Daniel Garcia, and documented the vehicle with photographs. The vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the carrier/driver compartment of the involved LLV.

2. The specific area of fire origin was determined to be under the dashboard, to the left of the steering column, at the firewall/bulkhead, immediately above the fuse cluster.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of an adverse electrical event within the Delta Electronic Control Solid State Turn Signal Hazard Flasher mechanism.

Observations

Exterior Inspection:

The vehicle sustained no visible exterior fire damage with the exception of a slight, discoloration pattern and soot residue that appeared on the interior side of the windshield, above the dashboard, right side.

Interior Inspection:

Fire effects were observed under the dashboard, to the left of the steering column, at the firewall/bulkhead, immediately above the fuse cluster. The fire was confined to this localized area, due to early application of a dry chemical extinguishing agent.

Fire exposure effects were noted at the top of the fuse panel cluster where a Delta Electronic Control Solid State Turn Signal Hazard Flasher mechanism had been located. This item was found hanging and suspended by its electrical conductors.

Inspection of the Turn Signal Hazard Flasher mechanism evidenced fire effects where circuits enter the device. These observations also included what appeared to be the effect of interior high pressure release which vented at this location.

Fire effects diminished rapidly away from this location in an orderly fashion in the carrier and cargo compartments.

Engine Compartment Inspection:

There was no fire effects observed in the engine compartment. The vehicle was equipped with a 2.2L four-cylinder engine. The vehicle was also equipped with a fuel injected throttle body and electronic ignition.

Undercarriage Inspection:

There was no fire effects observed to the undercarriage. The vehicle was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel exhibited fire heat exposure effects on the top surface, decreasing to the lower portion. All fuses were observed to be intact.

Area of Fire Origin:

The fire originated at the Delta Electronic Control Solid State Turn Signal Hazard Flasher mechanism, which was mounted on top of the fuse panel cluster and held in place by a rubber band. The Turn Signal Hazard Flasher was installed the day before the fire.

Potential Contributing Factors:

A possible contributing factor to the cause of the fire was a manufacturing defect within the Delta Electronic Control Solid State Turn Signal Hazard Flasher mechanism or an installation error.

Evidence Collected:

The Delta Electronic Control Solid State Turn Signal Hazard Flasher mechanism was retained and sent to the Rimkus Consulting Group, Inc. facility in Charlotte, NC.

Service Records

Service records were collected and reviewed, confirming recent installation of the Delta Electronic Control Solid State Turn Signal Hazard Flasher mechanism.

Interview:

Mr. , carrier/driver for the United States Postal Service, provided the following information:

- The day of the fire he started his route at 10:30 A.M.
- The LLV drove and operated with no issues.
- At 1:00 P.M., he stopped at a delivery location, turned “on” the flasher lights for the first time and heard a “pop” down in the right side, below the dash board.
- Smoke immediately appeared from that area, near the fuses.

- He got out of the LLV to get the mail out of the vehicle.
- A passerby saw the smoke and assisted getting the mail out and called the fire department.
- About two weeks prior, the LLV had an unrelated issue and was at the VMF for work, and it was just put back in service. The fire happened the first time he used the flashers.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A Lowe, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1
Subject LLV.



Photograph 2
Interior right side below dashboard. Origin area, yellow circle.



Photograph 3

Delta Electronic Control Solid State Turn Signal Hazard Flasher.



Photograph 4

Delta Electronic Control Solid State Turn Signal Hazard Flasher.



Curriculum Vitae



David A. Lowe, CFI

Fire Consultant
Fire Division

Background

Mr. Lowe is a Certified Fire Investigator with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services. He is also FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 28 years of experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land.

Investigations and consultations, conservatively estimated at over 2,250, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otay, Mexico and Taber, Alberta, Canada.

Contact Information

(657)-229-9952

dlowe@rimkus.com

13900 Alton Parkway,
Suite 123
Irvine, CA 92618



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road SE, Suite 224
Atlanta, Georgia 30339
Telephone: (770) 436-9399

August 19, 2019

Re: RCG File No: 100009604
LLV Number: 4300812
VMF Location: 1605 Boggs Road Duluth, Georgia
Subject: Preliminary/Final Report

Dear ,

On July 24, 2019, a fire occurred in a US Postal Service vehicle at 4375 Woodward Way in Cumming, Georgia. On July 30, 2019, we inspected the 1994 GMC LLV 4300812 with VIN 1GBCS1049R2906881, at the North Metro Vehicle Maintenance Facility located at 1605 Boggs Road in Duluth, Georgia.

In the course of our work we inspected the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Gregory M. Cloer, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the interior compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the turn signal hazard flasher (emergency flasher override switch).

3. The specific ignition sequence and cause of the fire was determined to be the direct result of an abnormal electrical event that resulted in the overheating and ignition of the emergency flasher override switch.

Observations

Exterior Inspection:

Inspection of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. There were no fire movement patterns or thermal damage observed along the exterior sides of the vehicle. Smoke staining was observed along the interior side of the windshield at the corner of the dashboard and the driver's side windshield post.

Interior Inspection:

Inspection of the cargo compartment of the vehicle revealed no fire damage. Smoke damage was observed on the windshield at the driver's side windshield post extending from the dashboard upward onto the windshield. Fire movement patterns were observed below the dashboard on the driver's side extending from the emergency flasher override switch that was mounted along the interior side of the driver's side quarter panel.

Engine Compartment Inspection:

The engine compartment was inspected. The vehicle was equipped with a 2.2L engine. The vehicle was also equipped with a fuel injected throttle body and direct ignition system. The battery and its electrical conductors were observed intact. The electrical conductors in the engine compartment were examined. There was no adverse electrical activity noted on the electrical conductors within the engine compartment.

The engine oil and transmission fluid were examined and observed to be within their respective normal operating range. The fuel system was an AC Delco model.

Undercarriage Inspection:

Inspection of the undercarriage revealed no fire patterns extending from underneath the vehicle. The LLV was mounted on a GM frame. The fuel tank and fuel lines along the frame rail did not show any signs of failure. The exhaust system was intact. The transmission revealed a leak along the front side of the transmission.

Fuse Panel Inspection:

Inspection of the fuse panel revealed no fire damage. There were no blown or "Open" fuses. The electrical conductors and their connectors were observed intact with no abnormal electrical event. The fuse panel was eliminated as the origin of the fire.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence the fire originated in the passenger compartment. The specific area of origin was at the emergency flasher override switch.

Potential Contributing Factors:

On July 24, 2019, the North Metro VMF Manager, Mr. Michael Bacon, provided an email and photographs explaining the failures of the emergency flasher override switches.

The following was reported:

My tech that repaired 4300812 found this. I thought you needed to see it.

Based on the wiring diagram, the only protection on the circuit for the flasher mod is a fusible link at the back of the alternator. My tech didn't trust two failed flasher mods in two days. He also found a broken brake pedal support bracket (spider bracket). Not being a trusting sort, he added an inline fuse to the circuit. Every time he would apply the park brake it would blow the inline fuse. That is when he dug deeper into the harness that had no fire damage and found a single bare wire that just happened to be the wire that powers the flasher mod. It looks like the JIS flasher mod is not to blame but rather a short to ground caused by a broken spider bracket that was overheating the mod. Maybe the inline fuse needs to be an authorized modification since it looks like we are going to keep these trucks.

Evidence Collected:

The emergency flasher override switch and its associated wiring harness were collected as evidence and submitted to the Rimkus Consulting Group, Inc. Charlotte Office for any future potential analysis.

Interviews:

The interview of the carrier was conducted. He reported the following:

- Mr. had been employed with the USPS for approximately 23 years.
- Mr. was assigned to LLV 4300812 for approximately 4 years.
- During his route, the hazard flashers stopped operating. The turn signals continued to operate. Mr. reported the problem to the VMF. A VMF technician responded to his location and performed a repair.

- After the repair by the VMF technician, the turn signals stopped operating and the hazard flashers were operating. At the end of his route, Mr. reported the second problem to the VMF.
- On the day of the fire event, a second repair was made by the VMF. Mr. started his route around 10:30 a.m.
- At approximately 12:30 p.m., Mr. was delivering a package to a residence. He parked the LLV along the curb in front of the residence. The hazard flashers were "On". Mr. was out of the LLV for approximately 2 minutes before returning to continue his route.
- Upon his return to the LLV, the driver's door was open and Mr. observed smoke coming from the corner of the dashboard along the driver's side of the LLV. He then observed a small fire underneath the dashboard.
- Mr. returned to the residence and the homeowner provided a fire extinguisher. Mr. extinguished the fire.

Service Records:

Service records going back one year were obtained and reviewed. There was nothing documented that was done to the LLV that may have contributed to the fire.

This report contains a summary of our findings and does not include a full description of the investigative tasks and methodology we took to reach our conclusions. If a full final report of findings is needed, one will be completed at the request of USPS.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M Cloer, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

August 19, 2019
Rimkus File No. 100009604

Photograph 1

View of the driver's side and front exterior.



Photograph 2

View of the passenger's side and rear exterior.



August 19, 2019
Rimkus File No. 100009604

Photograph 3

View of the interior fire movement patterns.



Photograph 4

View of the fire damaged emergency flasher override switch.



Photograph 5

View of the emergency flasher override switch and its associated wiring harness that was collected as evidence.



August 19, 2019
Rimkus File No. 100009604

Curriculum Vitae



Gregory M. Cloer, CFI

Fire Consultant
Fire Division

Background

Mr. Cloer is a Certified Fire Investigator through the International Association of Arson Investigators and National Professional Qualification, a Certified Arson Investigator through Georgia Peace Officer Standards and Training Council (P.O.S.T.) and certified for fire/arson investigation through the National Fire Academy. He was certified by Georgia P.O.S.T. as a basic peace officer and served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting and prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator.

Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. He has testified as an expert in criminal and civil courts related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

Contact Information

(770) 436-9399

gcloer@rimkus.com

2030 Powers Ferry Road SE,
Suite 224
Atlanta, GA 30339



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road SE, Suite 224
Atlanta, Georgia 30339
Telephone: (770) 436-9399

November 20, 2019

Re: RCG File No: 100017987
LLV Number: 4300886
VMF Location: 3900 Crown Road Atlanta, Georgia 30354
Subject: Preliminary/Final Report

On October 20, 2019, a fire occurred in a US Postal Service vehicle at 2024 MacLand Road, SW in Covington, Georgia. On November 1, 2019, we inspected the 1994 Chevrolet LLV 4300886 with VIN 1GBCS1041R2906891, at the Atlanta Vehicle Maintenance Facility located at 3900 Crown Road in Atlanta, Georgia.

In the course of our work, we inspected the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Gregory M. Cloer, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be along the starter electrical conductor that was located along the front mail side area of the engine.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a mechanical failure of the starter conductor mount that caused

the starter electrical conductor to come in direct contact with the edge of the mount which then led to an adverse electrical event involving the starter electrical conductor. The adverse electrical event ignited nearby combustible materials of the air intake housing.

Observations

Exterior Inspection:

Inspection of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side.

Movement and intensity fire patterns were observed along the front, left and right front sides of the vehicle indicating a fire originating in the engine compartment. There was no evidence to indicate that the LLV had recently been involved in a collision.

Interior Inspection:

Inspection of the interior revealed the severe fire damage to the front area of the interior compartment. Smoke damage was observed throughout the remaining areas of the interior and cargo compartment.

Engine Compartment Inspection:

The engine compartment was inspected. The vehicle was equipped with a 2.2L engine. The vehicle was also equipped with a fuel injected throttle body and a high output ignition coil. Fire damage was observed throughout the engine compartment. Most of the combustible materials along the mail side of the engine had been consumed during the fire event. The greatest degree of fire damage was observed along the front mail side of the engine.

The fuel system was examined and found to be intact and observed with no fire damage. The battery for the vehicle was located at the front driver's side of the engine compartment and had sustained thermal damage. The vehicle fluids were examined and were found to be within their respective operating range.

The electrical conductors were examined and the starter electrical conductor was observed arc-severed along the front mail side of the engine. The remaining electrical conductors in the engine compartment were observed intact with fire damage. There were no other abnormal electrical events observed in the engine compartment.

Undercarriage Inspection:

The undercarriage was examined. The involved LLV was mounted on a GM frame. The frame rail components were undamaged. The associated fuel lines and filter system were intact and free of damage. The under carriage was eliminated as the origin of the fire.

Fuse Panel Inspection:

The fuse panel was observed severely fire damaged. All of the fuse panel combustible materials had been consumed during the fire. The electrical conductors and their connectors were observed with no abnormal electrical event. The fuse panel was eliminated as the origin of the fire.

Area of Fire Origin:

Based on our observations, it was determined that the area of fire origin was in the engine compartment along the front mail side of the engine.

Potential Contributing Factors:

A mechanical failure of the starter cable mount led to the starter's electrical conductor coming in direct contact with the edge of the mount. The contact of the electrical conductor insulation against the edge of the mount resulted in the starter electrical conductor to become grounded to the mount which led to an adverse electrical event.

Evidence Collected:

No evidence was collected.

Interview:

Reportedly, the carrier was operating the LLV at the time of the fire event. She smelled smoke; pulled over and flames were observed venting from under the hood.

Service Records:

A review of the maintenance records did not reveal any maintenance issues that could be attributed to the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to

us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

November 20, 2019
Rinkus File No. 100017987

Photograph 1
View of the exterior.

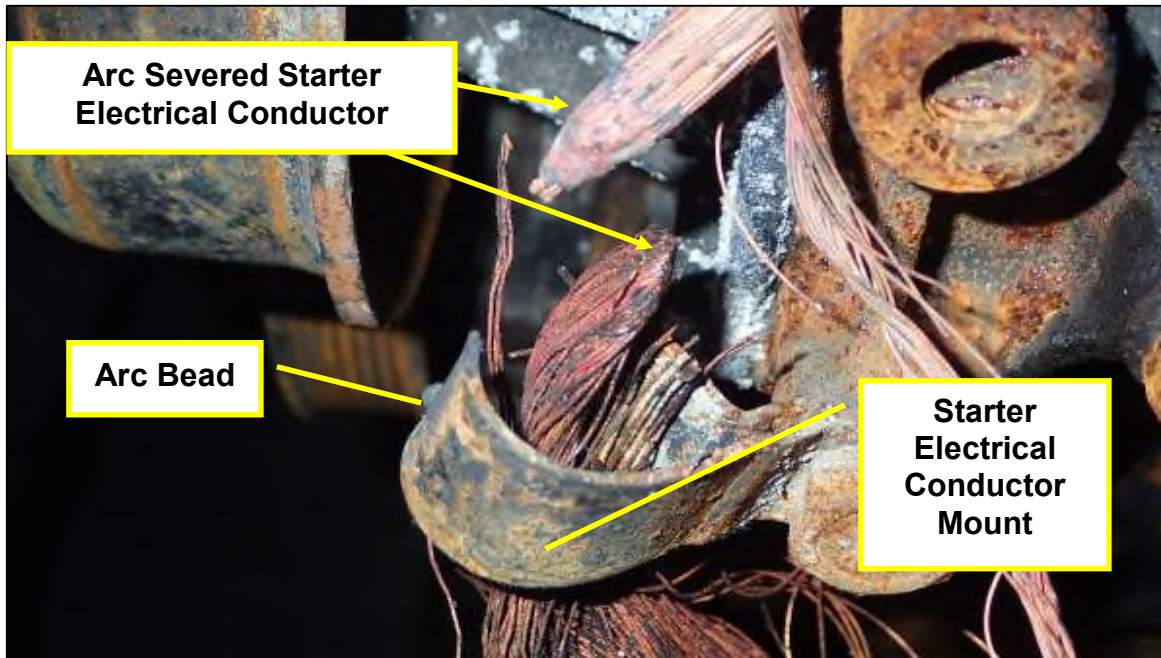


Photograph 2
View of the fire origin.



Photograph 3

View of the starter electrical conductor and mount.



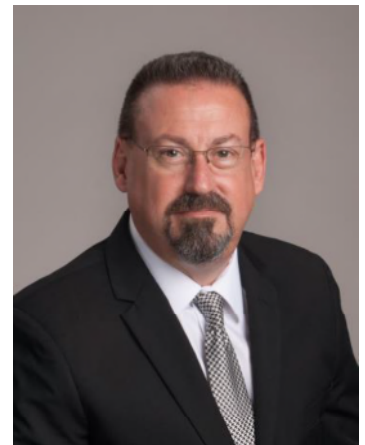
Photograph 4

View of the damaged mount.



November 20, 2019
Rimkus File No. 100017987

Curriculum Vitae



Gregory M. Cloer, CFI

Fire Consultant
Fire Division

Background

Mr. Cloer is a Certified Fire Investigator through the International Association of Arson Investigators and National Professional Qualification, a Certified Arson Investigator through Georgia Peace Officer Standards and Training Council (P.O.S.T.) and certified for fire/arson investigation through the National Fire Academy. He was certified by Georgia P.O.S.T. as a basic peace officer and served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting and prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator.

Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. He has testified as an expert in criminal and civil courts related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

Contact Information

(770) 436-9399

gcloer@rimkus.com

2030 Powers Ferry Road SE,
Suite 224
Atlanta, GA 30339



Rimkus Consulting Group, Inc.
4000 Eagle Point Corporate Drive
Suite 122
Birmingham, AL 35242
(205) 314-5718 Telephone
(770) 438-2189 Facsimile

June 15, 2016

Re: RCG File No: 44300910
LLV Number: 4301006
VMF Location: 6701 Winton Blount Boulevard in Montgomery, Alabama
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 4301006. The vehicle was examined at the USPS Montgomery VMF located at 6701 Winton Blount Boulevard in Montgomery, Alabama. The fire incident reportedly occurred on March 4, 2016 while the vehicle was parked after operating hours at the post office located at 560 George Todd Drive in Montgomery, Alabama.

In the course of our work, the vehicle was inspected and photographed. Interviews of the mechanics at the VMF in Montgomery, Alabama were taken on April 19, 2016. Our work to complete this assignment was performed by Fire Consultant Ronald Blankenship, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The involved LLV sustained severe fire damage which was not witnessed and was discovered burned by arriving employees in the early morning hours.
2. The area of fire origin was potentially in the dashboard area; however, due to the severe damage could not be conclusively determined.

3. The remains of the headlamp switch and some electrical component remains were collected and had sustained severe fire damage. A clear determination as to cause or an effect of the fire could not be determined.
4. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the fire damage and the lack of conclusive physical evidence of a cause.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver side and the left side refers to the passenger side. The exterior examination of the vehicle revealed that the aluminum exterior had failed due to thermal heating that included the hood, driver side front fender, passenger side front fender and the vehicle's roof above the passenger compartment. All of the vehicle's glass had failed due to thermal heating. The majority of the front tires had been consumed by the fire. The greatest degree of fire damage was observed on the driver's side.

Interior Inspection:

The passenger compartment of the vehicle was examined and fire damage was observed throughout. The majority of the combustible materials had been consumed by the fire. An examination of the electrical conductors located along the dash revealed that there was no evidence of adverse physical electrical activity. The greatest degree of fire damage in the passenger compartment was along the driver side.

Engine Compartment Inspection:

The engine compartment of the vehicle was examined and we observed that the majority of the combustible materials had been consumed by the fire. The radiator was observed to be in place and had sustained thermal damage along the rear on the right lower corner. This was consistent with fire travel from the rear of the engine compartment along the driver side. The soft metals along the driver side had softened due to thermal heating.

Undercarriage Inspection:

The undercarriage of the vehicle was examined and we observed no visible fire damage. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

Due to the extensive fire damage, the fuse panel could not be inspected.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the passenger compartment on the driver side.

Potential Contributing Factors:

Issues with the headlamp switch and high/low beam switch that was routed in the area of origin could not be eliminated. The involved components were collected and sent to Jack Kennedy in the Charlotte, North Carolina office for analysis.

Evidence Collected:

Exhibit 1: The remains of the headlamp switch assembly that was located in the fire debris on the left side of the steering column.

Exhibit 2: Unidentified electrical components from the fire debris in the passenger compartment.

Interviews:

On April 19, 2016, a mechanic that worked at the USPS Montgomery VMF reported the following information:

- The vehicle was manufactured on a GM frame with a GM fuel filter.
- The vehicle was equipped with a 2.2 Liter gasoline engine.

On April 19, 2016, the VMF Manager, reported the following information:

- Based on the recorded data, the regular driver was a rural carrier, Ms. Magen Lewis.
- It was documented that she parked the vehicle at the post office located at 560 George Todd Drive in Montgomery, Alabama on March 3, 2016 at approximately 12:33 p.m.
- Another driver got the vehicle on March 3, 2016 at approximately 12:41 p.m. and returned it to the post office at approximately 4:15 p.m.

- The post office personnel normally left the facility between 5:30 p.m. and 6:00 p.m.
- When the VMF tech arrived at the post office in the morning on March 4, 2016, it was discovered that the vehicle had burned and no fire was visible.
- Because the fire was extinguished, the Montgomery Fire Department was not notified of the fire event.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Ronald L. Blankenship

Ronald L. Blankenship, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

June 15, 2016
RCG File No. 44300910

Photograph 1

View of the front of the vehicle.



Photograph 2

View of the passenger side.



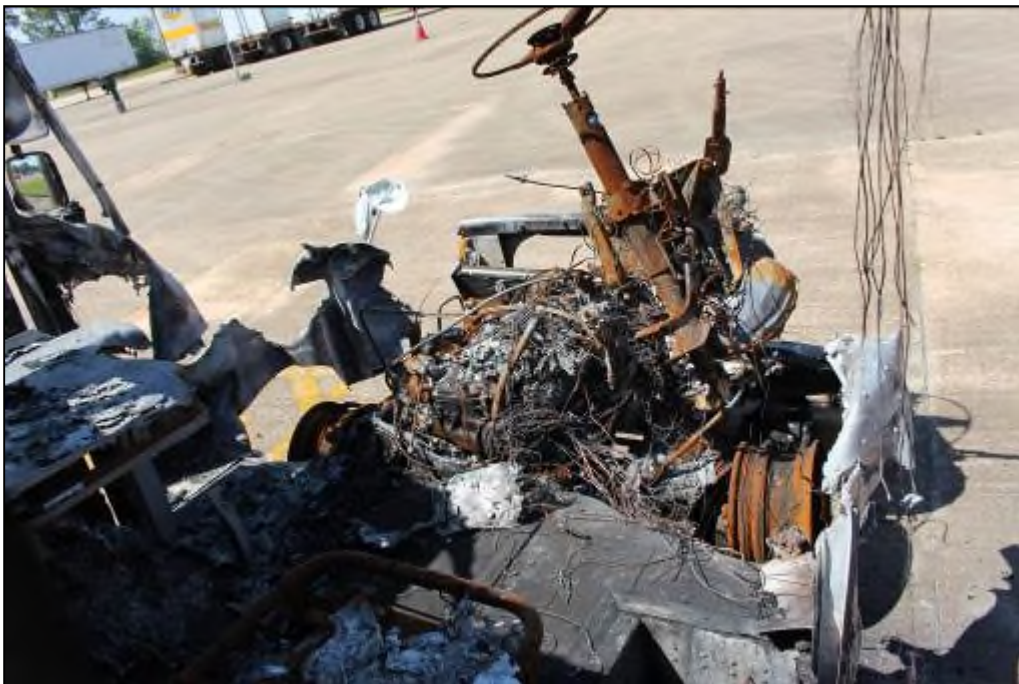
Photograph 3

View of the engine compartment.



Photograph 4

View of the passenger compartment.



June 15, 2016
RCG File No. 44300910

CVs



RONALD BLANKENSHIP, C.F.I. FIRE CONSULTANT

Mr. Blankenship is a Certified Fire Investigator (C.F.I.) by the International Association of Arson Investigators (IAAI) and the State of Alabama Fire College, a Certified Advanced Fire Cause & Origin Expert Witness, a Certified Fire Inspector, a Certified Hazardous Materials Technician, and a Certified Fire Officer through the State of Alabama. Mr. Blankenship is also a Certified Home Inspector through The Home Inspection Institute and a Certified Inspector through the American Society of Home Inspectors (ASHI).

Mr. Blankenship has an extensive background in fire firefighting & prevention in which he served 20 years with the City of Auburn's Fire Department, six of those years as Fire Chief. Mr. Blankenship also served as the Fire Chief for the City of Phenix - City Fire Rescue Services for four years. While working with the Alabama State Fire Marshal's office, Mr. Blankenship was a Deputy State Fire Marshal and a Certified Law Enforcement Officer. Mr. Blankenship's experience encompasses investigation of fires, explosions, bombings and all related crimes to ensure the origin and cause of the incidents were properly documented. Mr. Blankenship has testified as an expert in criminal court related to fire investigations he has performed. Mr. Blankenship's professional experience includes, but is not limited to residential, commercial, and vehicle fire origin and cause investigation and explosions. Mr. Blankenship owned and operated a Professional Chimney Services for ten years. He was certified wood stove and fireplace technician. Mr. Blankenship owned and operated Complete Home Inspectors for nine years.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. Fire Administration – University of Memphis, Memphis, TN
A.A. Fire Science – Chattahoochee Valley Community College
Certified Home Inspector – The Home Inspection Institute
Executive Fire Officer – National Fire Academy

TRAINING/CERTIFICATES

Certified Fire Inspector • Alabama Peace Officers Standards (APOST) Law Enforcement • Firefighter I • Firefighter II • Fire Instructor I • Fire Instructor II • Fire Inspector I • Fire Inspector II • Fire Officer I • Fire Officer II • Fire Officer III • Fire Investigator • Advanced Fire Investigator • Advanced Fire Cause & Origin Expert Witness • Incident Command System • Excavation & Trenching Cave-In Rescue • Self-Contained Breathing Apparatus • Fire Department Management • Hazardous Materials Technician • Building Construction for Fire Suppression Forces • ISO Grading Process • Certified Home Inspector -The Home Inspection Institute • American Society of Home Inspectors.

EMPLOYMENT HISTORY

2010 – Present	Rimkus Consulting Group, Inc.
2003 – 2010	Complete Home Inspectors, LLC
2005 – 2007	Southern Union State Community College
2002 – 2003	Alabama State Fire Marshal's Office
2001 – 2002	L.G. Fire Sprinkler Services



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
7501 South Quincy Street, Suite 160
Willowbrook, Illinois 60527
(866) 746-5871 Telephone
(630) 321-1847 Facsimile

July 10, 2018

Re: RCG File No: 50905686
LLV Number: 4301433
VMF Location: 1145 2nd Avenue Des Moines, Iowa
Subject: Preliminary/Final Report

Dear

On June 15, 2018, Rimkus Consulting Group, Inc. was retained to examine LLV 4301433, VIN 1GBCS1041R2907569. The vehicle was examined at the USPS Des Moines Vehicle Maintenance Facility located at 1145 2nd Avenue in Des Moines, Iowa. The fire incident reportedly occurred on 2400 South Duff Avenue in Ames, Iowa on June 7, 2018.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on June 25, 2018. Our work to complete this assignment was performed by Fire Consultant David A. Mager, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the driver's side rear quadrant of the engine compartment.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of ignition of atomized fuel coming in contact with the hot surface area of the components within the engine compartment. The absence of the screw for the retaining bracket of the fuel line allowed the fuel line to become loose in the fuel rail. The loose fuel line leaked atomized fuel from the fuel rail at the rear of the engine. The pressurized and atomized fuel came into contact with the hot exhaust pipe and ignited.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. We observed fire damage to the hood of the engine compartment. Burn patterns were on the hood toward the rear near the fire wall. The hood was physically damaged by the fire department during extinguishment of the fire. There was extinguishing agent on the front bumper of the vehicle. The windshield was smoke stained and cracked. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

Examination of the interior of the vehicle revealed fire damage to the mail side of the dashboard and ceiling. Burn patterns indicated that the fire entered the passenger compartment of the vehicle through the fire wall from the engine compartment. The ceiling and sun visor on the mail side of the vehicle were heat damaged. The top of the headrest of the driver's seat was heat damaged.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was throttle body fuel injected with four fuel injectors. The vehicle had a high output ignition. Fire damage to the engine was concentrated near the firewall of the vehicle. We observed fire damaged electrical conductors within the area of the ignition coil packs on the driver's side of the vehicle. We observed that

the screw for the retaining bracket of the main fuel line was missing. We assessed the fuel line where it entered the fuel rail and observed it to be loose.

The battery for the vehicle was located at the front right side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be fire damaged but intact; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact.

Fuse Panel Inspection:

Examination of the fuse panel revealed no visible fire damage to the panel or any of the fuses. The plastic housing of the fuse panel was intact, as were all of the fuses and connections.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment near the firewall on the driver's side of the vehicle.

Potential Contributing Factors:

The absence of the screw for the retaining bracket of the fuel line allowed the fuel line to become loose in the fuel rail. The loose fuel line leaked gasoline from the fuel rail at the rear of the engine. The pressurized and atomized fuel came into contact with the hot exhaust pipe and ignited.

Evidence Collected:

No evidence was retained from the vehicle.

Interview:

In an interview with the carrier/driver she provided the following information:

- She had started her route about 10:00 A.M.
- She had no problems with the vehicle until the end of the day.
- About 4:45 P.M., she smelled gasoline like the engine was flooded.
- The engine started and she drove away.
- The engine stalled and she pulled to the side of the road.
- The vehicle started but then stalled again.
- She turned the ignition off but left the key in the ignition.
- She called her supervisor to report the incident and said she would try to get the vehicle back to the office.
- While on the phone, fire flashed across the lower section of the passenger compartment.
- She fled the vehicle to a fire station down the street and returned with a firefighter and a fire extinguisher.
- Her supervisor called 911.
- She observed smoke and flames coming from the engine compartment.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records, it was determined that none of the maintenance on the vehicle within the last year was performed on the fuel system. It is unknown when the screw for the retaining bracket had been removed.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Mager

David A. Mager, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

July 10, 2018
RCG File No. 50905686

Photograph 1

Overall view of the vehicle.



Photograph 2

Overall view of the engine compartment.



July 10, 2018
RCG File No. 50905686

Photograph 3

Screw missing from retaining bracket.



Photograph 4

Fuel line removed from fuel rail.



July 10, 2018
RCG File No. 50905686

CVs



DAVID A. MAGER, CFI FIRE CONSULTANT

Mr. Mager is an International Association of Arson Investigators Certified Fire Investigator, Illinois State Fire Marshall Office Certified Fire Investigator, Certified Fire Officer II, Hazardous Materials Technician "B" and a Illinois Department of Public Health Certified Paramedic.

Mr. Mager has an extensive professional background in the areas of firefighting and fire investigations, and has investigated over five hundred fires. His professional experience includes fire and explosion investigations, fire protection and detection system inspections as well as hazardous materials mitigations.

As an International Association of Arson Investigators Certified Instructor and a Certified Instructor II through the Illinois State Fire Marshall Office, Mr. Mager has conducted numerous live fire training exercises for Fire Fighters and Fire Investigators using authentic room furnishings as well as classes on fire behavior and evidence preservation.

Mr. Mager is a Retired Deputy Fire Chief and had been the Training Officer with the Midlothian, IL. Fire Department. He was an Assistant Team Leader for the Southwest Hazardous Materials Response Team and routinely responded to fire and hazardous materials incidents, fire investigations and conducted life safety inspections within the municipality.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator - Illinois State Fire Marshall Office
Certified Fire Investigator - International Association of Arson Investigators
Certified Instructor – International Association of Arson Investigators
Certified Fire Officer II – Illinois State Fire Marshall Office
Certified Hazardous Materials Technician "B" - Illinois State Fire Marshall Office
Certified Fire Department Incident Safety Officer – Illinois State Fire Marshall Office
International Association of Arson Investigators – Member
International Association of Arson Investigators (Illinois Chapter) – Member

EMPLOYMENT HISTORY

2008 – Present	Rimkus Consulting Group, Inc.
1987 – 2015	Midlothian Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
10515 West Markam St., Suite V7
Little Rock, AR 72205
(877) 271-1168 Telephone
(972) 518 0011 Facsimile

November 4, 2016

Re: RCG File No: 22701211
LLV Number 4301707
VMF Location: 4700 East McCain Boulevard in Little Rock, Arkansas
Subject: Preliminary/Final Report

On September 22, 2016, a fire involving USPS LLV Number 4301701 occurred. At the time of the fire, the vehicle was at the Morrilton Post Office located at 502 N. Moose Street in Morrilton, Arkansas. On October 7, 2016, Rimkus Consulting Group, Inc. was retained to determine the origin and cause of the fire.

Our inspection of the vehicle occurred on October 26, 2016, at the USPS Vehicle Maintenance Facility (VMF) located at 4700 East McCain Boulevard in North Little Rock, Arkansas. In the course of our work we inspected and photographed the vehicle, reviewed maintenance and repair records, and completed interviews. The work to complete this assignment was performed by Ryan S. Baker, IAAI-CFI, Fire Consultant. A technical review of this file was completed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association 921 – “Guide for Fire & Explosion Investigations”.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of origin was determined to be in the area of the engine compartment where the fuel lines were routed.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of gasoline vapors from a leak within the fuel line from chaffing against the front floor cross member being ignited by the hot surface of the transmission.

Observations

Exterior Inspection:

An exterior examination of the LLV began at the front and continued in a clockwise direction. There was no exterior fire damage observed.

Interior Inspection:

An interior examination of the LLV originated at the cargo compartment and continued towards the front of the vehicle. There was no interior fire damage observed in the cargo compartment. All vehicle components, electrical wiring and controls were intact and free of fire damage.

An interior examination of the operator compartment was completed. The LLV odometer displayed 132,897 miles at the time of the inspection. The LLV had a vehicle identification number (VIN) of 1GBCS1047R2907818. The vehicle was manufactured by General Motors on January 25, 1994. There was no fire damage observed to the passenger compartment of the LLV.

Engine Compartment Inspection:

An inspection of the engine compartment was completed. The LLV had a 2.2 liter engine with a distributorless ignition system and was manufactured by General Motors. The engine compartment contained on 12-volt battery mounted along the driver's side of the LLV. There was no visible fire damage to conductors in the engine compartment.

The brake master cylinder and brake fluid reservoir were located along the right, rear corner of the engine compartment. There was no visible fire damage to the brake master cylinder, brake fluid reservoir, or brake lines.

The alternator was located along the right front portion of the engine. There was no visible fire damage to the alternator or conductors of the alternator.

Fire patterns were observed along the underside of the hood. These patterns revealed the fire communicated to the underside of the hood upon the hood being raised during the fire.

Fire damage was observed at the rear of the engine compartment at the bulk head. The fire patterns along the insulation of the bulk head revealed the fire originated below the engine and the passenger compartment, just above the transmission.

Undercarriage Inspection:

An inspection of the undercarriage was completed. The fuel filter was located midway along the inside of the frame rail on the left side of the vehicle. Two fuel lines branched off on the engine side of the fuel filter and crossed over the top of the transmission. This was determined to be the area of fire origin. The involved LLV was mounted on a GM frame.

The vehicle was modified in February of 2002 with a 700R4 type transmission. This transmission did not have a casting on the left side. The original 180 transmission had a casting with attachment points for the fuel lines crossing over the top of the transmission. The bell housing of the 700R4 transmission is larger than the original 180 transmission. This resulted in the fuel lines being relocated closer to the bottom of the front floor cross member.

The front floor cross member had signs of chaffing corresponding to the angle of the fuel line. The fuel lines had fire damage in this area along with the front floor cross member.

Fuse Panel Inspection:

The fuse panel was located along the right side of the dash and in proximity to the steering column and control pedals. There was no visible fire damage to the fuse panel or conductors.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated along the fuel lines crossing between front floor cross members above the transmission bell housing. The materials first ignited were uncontained gasoline vapors as a result of a leak within the fuel system. The ignition source of the fire was heat generated from the operational transmission. The specific ignition sequence and cause of the fire was a direct result of gasoline vapors from a leak within the fuel line from chaffing against the front floor cross member and then being ignited by the hot surface of the transmission.

Contributing Factors:

Gasoline vapors released from the fuel line crossing over the transmission bell housing. The leak in the fuel line was caused by chaffing against the front floor cross member.

Evidence Collected:

No physical evidence was collected for further inspection or laboratory analysis.

Interview:

At the time of the fire, the LLV was being operated. The driver reported smelling gasoline from the vehicle and took the vehicle for service a few weeks prior to the fire. He also observed melted plastic on the pavement under the LLV.

He reported to have picked up the LLV from the VMF in Morrilton, Arkansas a few hours prior to the fire. He was told there was a fuel injector issue, and a fuel injector was on order for replacement. He was told the vehicle was safe for operation.

He began to see smoke coming from the left side the dashboard area. He was close to the Morrilton Post Office and pulled into the parking lot. He turned the vehicle off and no longer saw any smoke. He started the ignition and began to see smoke again. He went into the Post Office and notified his manager.

He took the vehicle from the Post Office to the VMF in Morrilton. He did not see any smoke until he arrived at the VMF. He raised the hood of the LLV and observed flames coming up along the bulk head. He retrieved a fire extinguisher and suppressed the fire.

He did not observe any warning lights on the dash board prior the fire. He reported the vehicle was running fine prior to the fire. He had driven the LLV for approximately one and half years prior to the fire incident.

Service Records:

A review of the service records for the involved LLV indicated that the last PM inspection was completed on June 6, 2016. With the exception of not observing the chaffing on the fuel lines during the PM, we did not locate any recent service work that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Ryan S. Baker

Ryan S. Baker, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

November 4, 2016
RCG File No. 22701211

Photograph 1

Front side and right side showing fire patterns on the underside the hood.



Photograph 2

Rear of the engine compartment showing fire patterns along the bulk head from below.



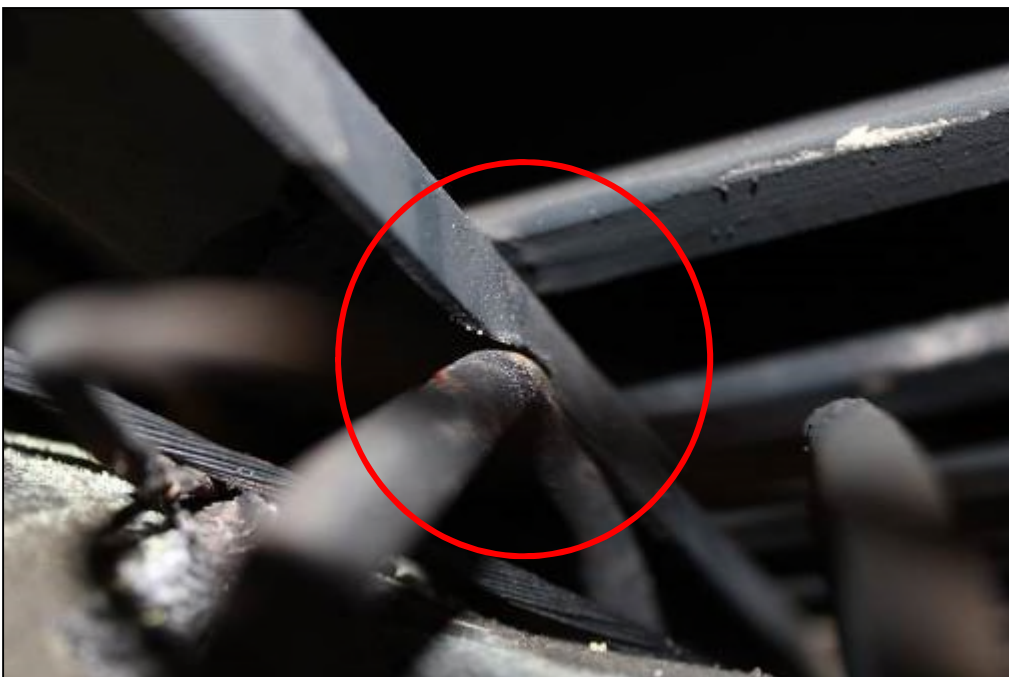
Photograph 3

From below the undercarriage looking up on the left side of the transmission showing the fuel lines and the fire patterns from above the transmission into the engine compartment.



Photograph 4

Fuel line and front floor cross member chaffing and fire cause.



November 4, 2016
RCG File No. 22701211

CVs



RYAN S. BAKER, CFI-IAAI, CFEI-NAFI, ECT-IAAI FIRE CONSULTANT

Mr. Baker's professional career has spanned over nineteen years as a criminal investigator, fire investigator, law enforcement officer, fire code inspector and plans reviewer, bomb technician, hazardous materials technician, and firefighter/emt. He has served as a fire investigator/inspector, hazardous materials technician, and bomb technician with the City of Little Rock, Arkansas Fire Department. He has also served as a criminal investigator and law enforcement officer with the City of Fayetteville, Arkansas Police Department and the City of Sherwood, Arkansas Police Department. He has investigated and determined the origin and cause of over 450 fires and explosions, to include commercial structures, multi-family and single dwelling residential, commercial, and passenger vehicles, heavy equipment, and fatalities. He is a certified bomb technician through the Federal Bureau of Investigations and responds to situations dealing with commercial and homemade explosives, military ordinances, improvised explosive devices, and post-blast investigations, nationwide. Mr. Baker is a court certified expert in the field of fire origin and cause determination, in both state and federal courts.

Mr. Baker is a Certified Fire Investigator through the International Association of Arson Investigators, a Certified Fire and Explosion Investigator through the National Association of Fire Investigators, a Certified Evidence Collection Technician through the International Association of Arson Investigators, and a Fire Investigator Technician through the International Association of Arson Investigators. Mr. Baker has completed numerous educational seminars and continuing education courses in the field of fire investigation and fire code enforcement.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Associates in Applied Sciences in Criminal Justice, Black River Technical College
Licensed Private Investigator- Arkansas
Certified Fire Investigator (CFI)-International Association of Arson Investigators (IAAI)
Certified Fire and Explosion Investigator (CFEI)-National Association of Fire Investigators (NAFI)
Certified Evidence Collection Technician (ECT)-International Association of Arson Investigators (IAAI)
Certified Fire Investigation Technician (FIT)-International Association of Arson Investigators (IAAI)
Member of International Association of Arson Investigators
Member of Arkansas Association of Arson Investigators
Member of National Association of Fire Investigators
Member of International Association of Bomb Technicians and Investigators
Member of Arkansas Fire Marshal's Association
Member of International Association of Special Investigation Units
Member of Arkansas International Association of Special Investigation Units



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, New Jersey 07631

Telephone: (201) 368-8551

Certificate of Authorization No. 24GA28127700

Certification Expiration Date August 31, 2020

July 10, 2019

Re: RCG File No: 100005758
LLV Number: 4301978
VMF Location: 1020 Westchester Avenue White Plains, New York
Subject: Preliminary/Final Report

Dear ,

On June 7, 2019, a fire occurred involving USPS LLV 4301978. The loss location was reported to be Frontier Road and Old Stage Road in Saugerties, New York. LLV 4301978 was examined at the VMF located at 1020 Westchester Avenue in White Plains, New York.

Rimkus Consulting Group, Inc. was retained to examine LLV 4301978, VIN 1GBCS1047R2908029 to determine the cause of the fire. During our investigation, we conducted an examination of the fire damaged LLV and documented the vehicle with photographs. In the course of our work, the vehicle examination was conducted by Fire Consultant Jeffrey Wilson, IAAI-CFI, on June 18, 2019. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using the systematic approach as recommended in the current edition of the National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for "Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment of the involved LLV.
2. The specific area of origin was at the exhaust manifold on the mail side of the engine. Engine oil was sprayed onto the exhaust manifold when an engine rod penetrated through the engine block.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a thrown rod through the engine block causing a hole that allowed engine oil to be expelled onto the hot exhaust manifold.

Observations

Exterior Inspection:

The vehicle sustained severe damage to the front half of the vehicle. The windshield was completely destroyed. Both of the front tires were observed to be completely damaged and both rear tires were undamaged.

Interior Inspection:

The cargo area sustained smoke damage throughout. The driver's compartment sustained severe fire and heat damage. The combustible material of the driver's seat had been consumed. The top portion of the mail rack along the left side had been consumed. The steering column had collapsed. The front bulkhead had been consumed. The entire dashboard, wiring, and wiring harness were completely consumed and could not be examined.

Engine Compartment Inspection:

The engine compartment had sustained significant direct fire and heat damage with the combustible components having been completely consumed. The metal components in the engine compartment had sustained a greater degree of fire and heat exposure on the mail side as compared to the driver's side of the vehicle. There were no visible electrical arcs or failures identified that could have been causative of this fire. The vehicle was equipped with a 2.2 LT 4.0L six-cylinder engine. The vehicle was also equipped with a fuel injected throttle body and electronic ignition.

An examination of the engine block was conducted. A large hole was observed on the mail side of the engine block directly behind the exhaust manifold. The hole was parallel with the engine crank shaft and appeared to have been blown from the inside

out by a piston rod failure. Based on the fire patterns observed, the left side of the engine within the engine compartment was determined to be the area of origin.

Undercarriage Inspection:

We were unable to do a complete undercarriage examination of the vehicle for safety reasons. Loose components presented a drop hazard. From the areas of the undercarriage, we were able to examine the fire damage and it was consistent with a fire originating on the left front of the engine compartment.

Fuse Panel Inspection:

We were unable to examine the fuse panel as it had sustained severe fire damage and mass loss to the panel and all of the fuses. As a result of the fire damage and mass loss, we were not able to determine if any fuses were open or blown.

Area of Fire Origin:

The area of origin was the mail side front of the engine compartment.

Potential Contributing Factors:

The piston push rod for the #1 cylinder sustained a catastrophic failure and punctured the engine block allowing engine oil to be expelled onto the hot surfaces of the exhaust manifold. The engine oil then ignited. The fire spread to surrounding combustible components.

Evidence Collected:

No evidence was collected.

Witness Statement:

The LLV reportedly was being driven at the time of the fire. The carrier stated that she began to see smoke coming out the mail side tire wheel well. The carrier exited the vehicle and observed fire from the engine compartment. The fire department responded and extinguished the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or services that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jeffrey Wilson

Jeffrey Wilson, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

July 10, 2019
Rimkus File No. 100002197

Photograph 1
USPS LLV 04301978.



Photograph 2
Mail side, front of vehicle.



Photograph 3

Overview of engine compartment.



Photograph 4

Close-up of engine.



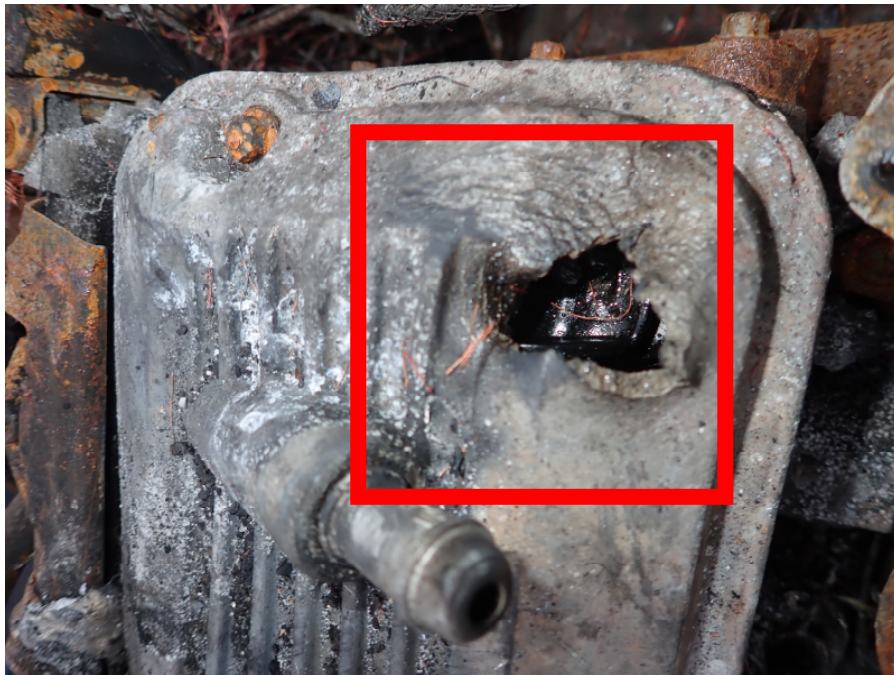
Photograph 5

Close-up of engine compartment.



Photograph 6

Close-up of engine compartment.



Curriculum Vitae



Jeffrey Wilson, CFI, CFEI

Fire Consultant
Fire Division

Background

Mr. Wilson holds a B.S. degree in Fire Science and is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire & Explosion Investigator (NAFI-CFEI) with the National Association of Fire Investigators, a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard) and a New York State Fire Investigator. He is also Licensed Private Investigator in New York, New Jersey, Connecticut and Massachusetts.

His professional career includes 20 years of experience with the New Rochelle Police Department. He was promoted to the rank of Detective in 1995 and was later assigned to major case investigations in 2005 which included among other investigations, arson. He obtained certification as a New York State Fire Investigator in 2005 and was then appointed to the Westchester County Cause and Origin team at that time, which he continues to serve on today. In addition to his law enforcement career, Mr. Wilson has over 30 years as a volunteer firefighter and obtained the rank of Fire Captain.

He has investigated and determined the origin and cause of several hundred fires to include commercial structures, residential structures, vehicles and wild land. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Wilson has testified on several occasions involving the investigation of fires in New York.

Contact Information

(551)250-3878

jwilson@rimkus.com

25 Rockwood Place, Suite
200
Englewood, NJ 07631



Rimkus Consulting Group, Inc.
9125 Guilford Road, Suite 108
Columbia, Maryland 21046
(877) 872-2999 Telephone
(410) 872-9111 Facsimile

March 1, 2018

Re: RCG File No: 47509464
LLV Number: 4303022
VMF Location: 60 West Oliver Street Baltimore, Maryland
Subject: Preliminary/Final Report

Dear

On January 21, 2018, a fire involving USPS LLV 4303022 occurred. The loss location was reported to be 10539 Rocky Ridge Road in Rocky Ridge, Maryland. LLV 4303022 was examined at the Baltimore VMF located at 60 West Oliver Street in Baltimore, Maryland.

Rimkus Consulting Group, Inc. was retained to examine LLV 4303022, VIN 1GBCS1047R2909018. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver and documented the vehicle with photographs. In the course of our work, the vehicle examination was conducted by Fire Consultant Brian L. Balega, IAAI-CFI, on February 1, 2018. This report was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment in the area of the bulkhead on the right side of the vehicle.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the mail compartment, engine compartment, dashboard area, and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the mail compartment, engine compartment, dashboard area, and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a direct result of ignition of either an adverse electrical event or atomized engine fluid coming in contact with a competent ignition source within the engine compartment as a cause of the fire.

Observations

Exterior Inspection:

The vehicle sustained severe fire damage to the engine and mail compartments. Based on the fire patterns observed, it was determined the fire initiated within the engine compartment then progressed into the mail compartment through the windshield and bulkhead. Fire development patterns were observed on the rear sides of the vehicle indicating fire communication from the front mail compartment into the rear cargo area along both sides of the vehicle.

The rear cargo door sustained moderate fire damage to the exterior from fire development inside the rear cargo area.

Interior Inspection:

The cargo area had sustained the least fire damage. The front mail area and mail shelf sustained severe fire damage. Based on fire pattern analysis and interviews conducted, it was determined that the fire originated within the engine compartment and developed through the bulkhead/windshield area into the mail compartment.

Engine Compartment Inspection:

The engine compartment sustained severe fire damage and mass loss. Based on the fire patterns and mass loss observed, it was determined that the fire origin was located on the mail side, rear area of the engine compartment near the bulkhead.

In this area of the engine compartment was where the heater components and various electrical wiring were located.

Undercarriage Inspection:

No fire damage or effects were visible to the undercarriage behind the engine area. The LLV was manufactured in February, 1994 and utilized a General Motors chassis.

Fuse Panel Inspection:

The fuse panel was consumed by fire. No fuses were observed intact.

Area of Fire Origin:

The fire originated within the engine compartment, on the bulkhead near wiring and the heater components. The heater components sustained the most severe oxidation and fire damage. The heater fan was not frozen. The conductors leading away from the fan were separated from their ends. One of the multi-stranded conductors had adverse electrical activity (welding of the multi-stranded conductors).

The engine and transmission oil were inspected. Small samples were taken and preserved for potential analysis. I was unable to obtain an engine oil sample through the dipstick neck so the VMF representative removed the oil filter at my direction, which I seized for potential examination. Note: the filter contained a small amount of oil.

Potential Contributing Factors:

A potential contributing factor was an adverse electrical event within the wiring components for the heater/blower motor.

There was also a potential engine issue. Due to the driver's comments, the vehicle was placed into the VMF for the same problem a month before the fire. A destructive exam of the engine is suggested to rule it out as a potential cause.

Evidence Collected:

#1 – A small transmission oil sample

#2 – Engine oil filter

Interview:

Mr., carrier/driver, provided the following information:

- Mr. stated the day of the fire was a Sunday. He started work at about 7:30 A.M.

- He picked the vehicle up and conducted a walk around of the LLV ensuring the lights and tires looked okay.
- Mr. then drove to the mail pick up site which was about 20 minutes away.
- Mr. reported that as he was returning to his route, the vehicle started having problems. He reported that the vehicle began bogging down and misfiring. He stated he didn't even make it to his first delivery.
- He stated when he hit the gas the vehicle didn't want to go.
- Mr. reported that while he was on the phone calling the tow company when he noticed smoke beginning to come from the vehicle.
- He stated he opened the hood and found a fire along the "firewall" where three wires were running. He didn't see fire anywhere else. He attempted to extinguish the fire with a fire extinguisher provided by a citizen.
- Mr. reported the extinguisher helped but it wasn't enough, so he and the citizens removed the mail and waited for help.
- Mr. reported that this same LLV had an oil pressure issue a month earlier. The vehicle was sent to VMF.

Service Records:

After a review of the service records it was determined the LLV had an engine replacement in November 2017 by a subcontractor. The vehicle was returned to them in the early part of December 2017. The vehicle was inspected by VMF personnel and passed, so the vehicle was returned to service.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Brian L. Balega

Brian L. Balega, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

March 1, 2018
RCG File No. 47509464

Photograph 1

Frontal view of vehicle – mail side.



Photograph 2

Frontal view – driver side.



March 1, 2018
RCG File No. 47509464

Photograph 3

Rear view of vehicle.



Photograph 4

Area of origin of fire.



Photograph 5

Severe oxidation of heating components.



Photograph 6

Adverse electrical activity on wiring of heater blower motor.



March 1, 2018
RCG File No. 47509464

CVs



BRIAN L. BALEGA, IAAI-CFI, CFEI FIRE CONSULTANT

Mr. Balega is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). Mr. Balega has been awarded an advanced police officer certification, IFSAC Certified Fire Investigator, IFSAC Fire Fighter I, IFSAC Fire Fighter II, IFSAC Hazardous Materials Operations, IFSAC Hazardous Materials Awareness, and IFSAC Fire Service Instructor II from the State of Alaska Fire Standards Council. He also has obtained a Certified Fire Investigation Instructor from NAFI. In 2012 Mr. Balega was awarded the State of Alaska Fire Service Instructor of the Year for his numerous training events where he taught state and local fire/police departments in the aspects of fire investigations, pattern recognition and evidence collection.

Mr. Balega's career spans more than 20 years in fire and police services, he has investigated and determined the origin and cause of more than 500 fires to include commercial structures, residential structures, vehicles, marine and heavy equipment. He has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Balega is a court-qualified expert witness in Criminal and Civil proceedings in the State of Alaska. Mr. Balega has extensive training in fire and criminal investigations.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S.O.E. – Human Services/Criminal Justice – Wayland Baptist University, Anchorage, Alaska
A.A.S. – Criminal Justice – Westmoreland County Community College, Youngwood, Pennsylvania

Member of the International Association of Arson Investigators (IAAI) Number 127301
Member and former president of the Alaska Association of Fire Arson (Alaska Chapter IAAI)
Member of the National Association of Fire Investigators (NAFI) Number 13417-8119i
Member of the National Fire Protection Association (NFPA), Number 2762125

EMPLOYMENT HISTORY

2017 – Present	Rimkus Consulting Group, Inc.
2014 – 2017	Alaska Fire Investigations LLC
2008 – 2016	Anchorage Fire Department, Alaska
1996 – 2008	Anchorage Police Department, Alaska
1991 – 1996	US Army – Active Duty



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
560 Southwest 12th Avenue
Deerfield Beach, Florida 33442
(800) 861-7644 Telephone
(954) 428-1849 Facsimile
Certificate of Authorization No. 8301

November 28, 2017

Re: RCG File No: 41423108
LLV Number: 4303112
VMF Location: 1950 W. Oakland Park Boulevard Oakland Park, Florida
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was requested to examine the vehicle fire loss involving USPS LLV 4303112, VIN 1GBCS104XR2909286 occurred in Miramar, Florida on October 7, 2017. In the course of the work, we examined and documented the fire-damaged vehicle on October 31, 2017.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 1950 W. Oakland Park Boulevard in Oakland Park, Florida. The work to complete this assignment was performed by Fire Consultant Alexander F. Kapczynski, IAAI-CFI. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment in the area of the mail side bulkhead on the left side of the vehicle.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the mail side and engine compartments and the dashboard area and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the lack of remaining physical evidence and the severe fire damage to the mail side, engine compartment, and dashboard area.
4. We could not eliminate the possibility of a high-resistance connection generating heat until the combustible materials located in the area reached their ignition temperature as a cause of the fire.

Observations

Exterior Inspection:

The exterior examination of the fire-damaged vehicle commenced from the front of the LLV and continued in a clockwise rotation. The fire-damaged vehicle was found inside a bay of the VMF. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The inspection revealed that the vehicle sustained severe fire damage throughout the LLV. Fire patterns indicated that the fire originated within the engine compartment and spread towards the rear of the vehicle. The left side of the vehicle sustained greater damage as compared to the right side or the driver's side. The vehicle sustained severe fire damage to the left side of the vehicle and roof over the driver's compartment, with a large portion of the aluminum body consumed by the fire. All the tires were intact with the exception of the left front tire, which sustained fire damage.

Interior Inspection:

The interior inspection revealed severe fire damage in the driver's compartment and the cargo compartment. The vehicle's identification plate was found within the fire debris and the VIN was confirmed.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment.

The engine compartment sustained severe damage and the fire appeared to have lasted an extended period of time before being extinguished. The remains of the battery were positioned on the right side of the engine compartment. The positive and negative large conductors that had been connected to the battery were present and displayed no evidence of adverse electrical activity.

The left exhaust manifold was removed to reveal the engine block which was free of any defects or abnormalities. The fuel filter was positioned along the left side of the undercarriage and was intact. The fuel lines were examined between the fuel tank and the engine compartment. A fuel line was found to be partially severed behind the engine where the rubber hose attached to a metal fitting. The majority of the fire damage was observed in front of the partially severed fuel line.

The heater core normally positioned on the bulkhead on the left side of the engine compartment was found dangling in front of the left front wheel. The rubber hose attached to the heater core displayed a large hole in the rubber hose where it connected to the copper heater core. The large hole in the rubber hose did not appear to be caused by the effects of the fire.

Undercarriage Inspection:

The undercarriage was inspected and fire patterns found along the undercarriage revealed that the fire traveled from the front of the vehicle towards the rear. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel normally positioned in the driver's compartment below the steering column was consumed by the fire and could not be examined.

Area of Fire Origin:

Fire patterns indicated that the fire originated within the engine compartment and spread towards the rear of the vehicle. The path of fire travel appeared to have originated on the left, rear side of the engine compartment and traveled towards the right side of the cargo compartment.

Contributing Factors:

There were no contributing factors identified.

Carrier Interview:

On November 8, 2017, a phone interview was conducted with the mail carrier who was driving LLV 4303112 when the fire occurred. During the interview, he stated that the fire occurred near 8800 South Bermuda Drive in Miramar, Florida, between 3:00 P.M. and 3:30 P.M. The vehicle was operating properly before the fire occurred and there were no backfires or engine miss fires.

As he was making deliveries, he noticed smoke coming from the engine compartment. He pulled over and turned the ignition key to the "off" position. He first saw flames near the middle of the dashboard. He did not open the hood of the vehicle, and he tried to remove mail from the driver's compartment. It was a hot day and the blower motor/fan was not in the "on" position. There was a slight odor of gasoline just prior to the fire incident.

Evidence Collected:

Two items were collected from the fire damaged LLV and sent to the Rimkus Charlotte office for further evaluation:

- remnants of the heater core and attached rubber hose
- remnants of the blower motor/fan assembly

Lab Exam:

All artifacts collected were examined by Forensic Division Manager Mark H. Nelson, P.E. on November 7, 2017. Multiple loose connections were observed to the wiring terminal connection points associated with the blower fan motor. A high-resistance connection generating heat until the combustible materials located in the area reached their ignition temperature could not be eliminated as a cause of the fire.

Service Records:

The past 12 months maintenance records for the LLV were provided and reviewed. After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance, age, and degradation may have contributed to the cause of the fire.

The last preventive maintenance inspection was conducted several months before the fire incident in April of 2017.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Alexander F. Kapczynski

Alexander F. Kapczynski, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

November 28, 2017
RCG File No. 41423108

Photograph 1

Front view of fire damaged LLV 4303112.



Photograph 2

Left front side of the fire damaged LLV.



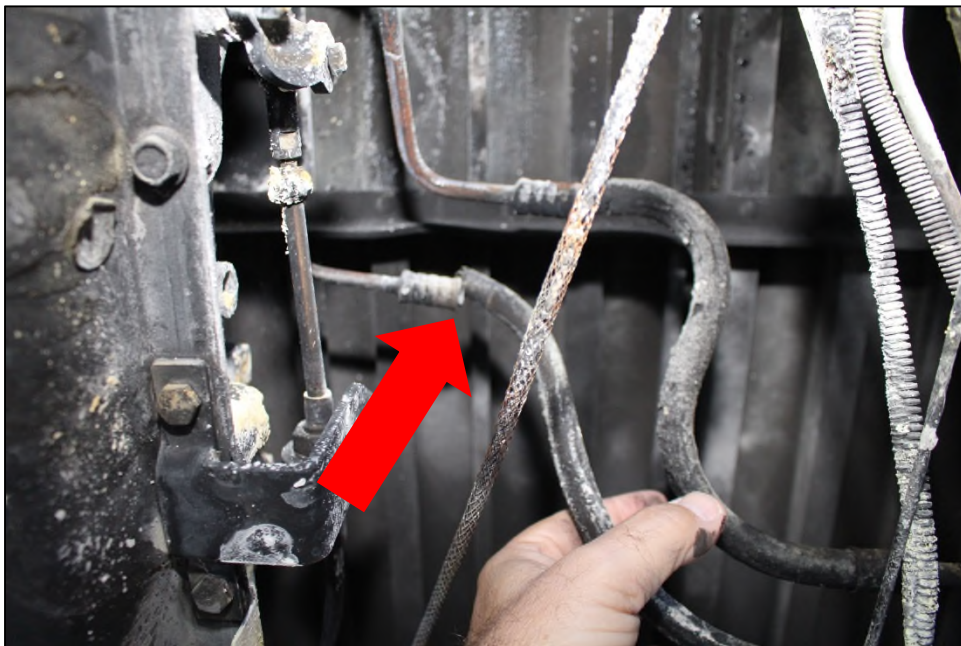
Photograph 3

The fuel filter was positioned on the left side of the undercarriage along the frame.



Photograph 4

A partially severed fuel line was found behind the engine.



November 28, 2017
RCG File No. 41423108

Photograph 5

View of the engine block after the exhaust manifold was removed.



Photograph 6

View of the blower motor/fan assembly.



Photograph 7

View of the blower motor/fan assembly.



Photograph 8

Close up view of the blower motor/fan assembly.



November 28, 2017
RCG File No. 41423108

CVs



**ALEXANDER F. KAPCZYNSKI, IAAI-CFI
FIRE CONSULTANT**

Mr. Kapczynski is a Certified Fire Investigator with the International Association of Arson Investigators (IAAI-CFI), the National Board of Fire Service Professional Qualifications and a New York State Certified Level II Fire Investigator with the New York State Office of Fire Prevention and Control. Mr. Kapczynski is a licensed private investigator in the State of Florida. He served in the City of Albany Fire Department for over twenty one years and was a Lieutenant in the City of Albany's Fire Investigation Unit (FIU) for approximately four years. As a member of the FIU, Mr. Kapczynski investigated and determined the origin and cause involving commercial structures, residential structures and vehicles. Mr. Kapczynski has testified on multiple occasions in criminal proceedings pursuant to his duties as a fire investigator.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

City of Albany Fire Department, Albany, New York
Firefighter Essentials, 1992

Hudson Valley Community College, Troy, New York
Emergency Medical Technician Paramedic Level, 1996

Corning Community College, Corning, New York
Associates Degree, Fire Protection Technology, 1997

New York State Fire Academy, Montour Falls, New York
Hazardous Materials Specialist Training, 1998

New York State Fire Academy, Montour Falls, New York
Fire Behavior & Principles of Fire Investigation, 2007

New York State Fire Academy, Montour Falls, New York
Fire Arson Investigation, 2007

International Association of Arson Investigators, Rutland, Vermont
Advanced Fire Investigation Techniques Seminar, 2008

New York State Fire Academy, Montour Falls, New York
Electrical Cause Determination I & II, 2009

International Association of Arson Investigators, Charlotte, North Carolina
Expert Report Writing, 2010

New York State Fire Investigators & ATF, Colonie, New York
Arc Mapping Seminar, 2010



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
699 Walnut Street, 4th Floor
Des Moines, Iowa 50309
Telephone: (630) 321-1846

July 9, 2019

Re: RCG File No: 100004601
LLV Number: 4303161
VMF Location: 615 6th Avenue S.E. Cedar Rapids, Iowa
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 4303161, VIN 1GBCS1046R2909138. The vehicle was examined at the USPS Cedar Rapids Vehicle Maintenance Facility located at 615 6th Avenue S.E. in Cedar Rapids, Iowa. The fire incident reportedly occurred at the Interstate 88 and Interstate 80 interchange in Moline, Iowa on May 27, 2019.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on June 6, 2019. Our work to complete this assignment was performed by Fire Consultant David A. Mager, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment of the involved LLV.
2. The specific area of origin was at the exhaust manifold on the left side of the engine. Engine oil was sprayed onto the exhaust manifold when an engine rod penetrated through the engine block.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a thrown rod through the engine block causing a hole that allowed engine oil to be expelled onto the hot exhaust manifold.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. We observed substantial fire damage to the left side of the engine compartment. There was a large mass loss of the engine hood on the left side. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured.

Interior Inspection:

Burn patterns indicated the fire entered the passenger compartment from the engine compartment on the left side of the vehicle.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L, fuel injected with four fuel injectors. The vehicle had a standard ignition coil. The battery was intact but fire damaged. Burn patterns indicated the battery was attacked by the fire. We observed extensive fire damage to the left side of the engine. We identified a hole in the left side of the engine block and oil pan. The positive cable to the engine starter was welded to the oil pan at the hole.

We drained the remains of the oil from the oil pan retaining a sample. We observed water was mixed with the oil. The water probably entered during extinguishment by the fire department. We identified that part of the connecting rod in the first cylinder of the engine was absent. The holes in the engine block and oil pan were made by the catastrophic failure of the engine.

Undercarriage Inspection:

Examination of the undercarriage revealed no visible fire damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure up to where they entered the frame rail. The exhaust system was intact.

Fuse Panel Inspection:

The fuse panel was intact and sustained some radiant heat damage.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment at the left side of the engine.

Potential Contributing Factors:

Catastrophic failure of the engine released heated engine oil and damaged a positive battery cable. The heated oil in contact with an electrical arc, from the damaged battery cable in contact with the oil pan, ignited the oil.

Evidence Collected:

The remains of the oil pan and engine oil were retained as evidence. The oil sample diagnosis indicated higher than typical ferrous material. Elevated levels of aluminum, iron, and dirt were also indicated.

Interview:

In an interview the carrier Mr. provided the following information:

- He left the facility about 10:15 a.m.
- During his pre-check he noted the windshield wipers were not working.
- He did not check engine fluids.
- The vehicle would shake if traveling above 45 mph.
- About 1:00 p.m. the windshield wipers began to work.
- Was driving up an incline, vehicle would not go above 35 mph.
- He heard a “pop” and the engine stalled.
- He parked vehicle on the side of the road.
- Did not observe any smoke or fire when he was picked up by another driver.
- He did smell a burning rubber smell.

- He was notified by the tow truck driver of the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records it was determined the last oil change was conducted January 7, 2019.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Mager

David A. Mager, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

July 9, 2019
Rimkus File No. 100004601

Photograph 1

Overall view of LLV 4303161.



Photograph 2

Overall view of engine compartment.



Photograph 3

Positive cable arced to oil pan.



Photograph 4

Hole in engine block.



Curriculum Vitae



David A. Mager, C.F.I. (V)

Fire Consultant
Fire Division

Background

Mr. Mager is an International Association of Arson Investigators Certified Fire Investigator, Illinois State Fire Marshall Office Certified Fire Investigator, Certified Fire Officer II, Hazardous Materials Technician "B" and was an Illinois Dept. of Public Health Certified Paramedic. He is also a Certified Private Investigator in Illinois, Indiana, Michigan, Ohio, Minnesota, Iowa, Missouri and Wisconsin.

Mr. Mager was a Deputy Chief and had been the Training Officer with the Midlothian Fire Department in Illinois. He was an Assistant Team Leader for the Southwest Hazardous Materials Response Team and routinely responded to fire and hazardous materials incidents, investigated fires and conducted life safety inspections within the municipality.

He has an extensive professional background in the areas of firefighting and fire investigations and has investigated over 1000 fires. His professional experience includes fire and explosion investigations, fire protection and detection system inspections as well as hazardous materials mitigations.

As an International Association of Arson Investigators Certified Instructor and a Certified Instructor II through the Illinois State Fire Marshall Office, Mr. Mager has conducted numerous live fire training exercises for firefighters and fire investigators using authentic room furnishings as well as classes on fire behavior and evidence preservation.

As a forensic investigator, he performs scene investigation and analysis of fire and explosion incidents including origin and cause determination, analysis of products and circumstances surrounding the initiation of the fire.

Contact Information

(630) 321-1846
damager@rimkus.com
7501 S. Quincy Street,
Suite 160
Willowbrook, IL 60527



Rimkus Consulting Group, Inc.
5099 Commercial Circle, Suite 100
Concord, California 94520
(925) 677-7439 Telephone
(925) 677-7445 Facsimile

July 18, 2018

Re: RCG File No: 01906982
LLV Number: 4303241
VMF Location: 3775 Industrial Blvd. West Sacramento, California
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 4303241. The fire incident reportedly occurred at 2141 Ferry Street in Anderson, California on June 11, 2018 while it was being operated on its normal delivery route. The vehicle was examined at the USPS West Sacramento Vehicle Maintenance Facility located at 3775 Industrial Blvd. West Sacramento, California.

In the course of our work, we examined and documented the fire damaged vehicle on June 25, 2018. In addition, we interviewed the Manager of the West Sacramento VMF. Our work to complete this assignment was performed by Fire Consultant Jimmie McCants, NAFI-CFEI. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 Standard for "Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the operator's compartment of the involved LLV.

2. The specific area of fire origin was determined to be behind the headlamp switch positioned in the left side of the dashboard.
3. The specific ignition sequence and cause of the fire was inconclusive; however, a failure of the rheostat headlight switch could not be eliminated. The headlight switch was not recovered within the fire debris and could not be examined. The headlight switch may have been lost during fire suppression efforts, consumed in the fire or possibly lost from the resulting of towing operations of the vehicle to West Sacramento.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the left side of the vehicle refers to the mail side and the right side refers to the driver's or curbs side.

Severe fire and heat damage were observed on the front of the vehicle to include structural mass loss. The window frame, windshield, dashboard, bulkhead and the majority of the roof structure over the operator's compartment was consumed during the fire event. The majority of the fire damage was located at the front of the vehicle.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred in and around dashboard and bulkhead areas. The vast majority of the combustible materials in and around these areas had been consumed during the fire to include the majority of the conductors, switches, and related components. Fire patterns converted to heat and smoke patterns as progress was made into the cargo compartment.

Engine Compartment Inspection:

The engine compartment was examined. Severe fire and heat damage was observed at the rear of the compartment and decreased in severity as progress was made away from the bulkhead. The battery for the vehicle was located at the front right side of the engine compartment and sustained severe fire damage from exterior fire attack. We did not find any evidence of a catastrophic engine failure and there was oil on the engines dipstick.

The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment was observed with severe fire damage. The driver's side contained the brakes master cylinder, battery, alternator, rubber and plastic components, and the majority of the electrical conductors within the compartment. The ignition coil and fuel lines were also on this side. Most of the components were observed to be intact with severe fire damage. Fire patterns indicated that the moderate damage to the front of the engine compartment, including the radiator, fan blades, pulleys and hoses were caused by radiated heat originating from the center and bulkhead area. No evidence was observed of the fire originating within the brakes, wheel hubs or tires in the area of the engine compartment.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire or mechanical damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The fuel tank was undamaged and not leaking. The exhaust system was intact. The transmission was intact, undamaged and not leaking fluids. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

The fuse panel had sustained severe fire damage. All of the fuse panel combustible materials had been consumed during the fire. The electrical conductors and their connectors were observed and showed no signs of an electrical event. From statements obtained, we eliminated the panel as the origin of the fire.

Area of Fire Origin:

Based on our observations and witness statements it was determined that the area of fire origin was in the driver's compartment on the left side of the steering column at the headlamp switch.

Potential Contributing Factors:

Issues with the headlamp switch in the area of other electrical conductors could not be eliminated.

Evidence Collected:

No evidence was collected.

Interview:

We spoke to the Manager of the West Sacramento VMF. Mr. said that he did not have the driver's statement but had spoken to her and the driver had told him that she noticed smoke coming from under the dash area so she pulled to the side of the road and when she pushed the light switch in it went through the dash and she saw flames from behind the dash area.

After the fire department arrived and extinguished the fire, the LLV was eventually towed to the West Sacramento VMF where it was located when we conducted our examination. Mr. provided us with the previous six months of service records and could not comment on the LLV as it was not assigned to his facility.

We did attempt to contact the operator of the LLV at the time of the fire and were not able to set up a phone interview. The LLV had been moved to the West Sacramento VMF which is several hundred miles from the area it was damaged in.

Service Records

A review of the service records revealed no recent repairs or service that would have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jimmie L. McCants

Jimmie L. McCants II, NAFI – CFEI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

July 18, 2018
RCG File No. 01906982

Photograph 1
Front of LLV.



Photograph 2
Rear of LLV.



July 18, 2018
RCG File No. 01906982

Photograph 3

Dash and Bulkhead area of LLV.



Photograph 4

Area of origin in LLV.



July 18, 2018
RCG File No. 01906982

Photograph 5
Steering column area of LLV.



Photograph 6
Fuse panel area of LLV.



July 18, 2018
RCG File No. 01906982

CVs



**JIMMIE McCANTS, IAAI, CFEI
FIRE CONSULTANT**

Mr. McCants is a Certified Fire and Explosion Investigator and a licensed private investigator in California. With 22 years of fire investigation experience and 26 years of law enforcement experience he is uniquely qualified to work the most complex fire losses. He has investigated over 1,000 fires during his long career. He was assigned as a lead investigator for a multi-county fire investigation unit in California. Mr. McCants has investigated several fatal fires as well as numerous high profile fires and bombing incidents throughout northern California. He is well versed in taking statements and in the warning signs of arson and possible insurance fraud cases.

As a prior detective Mr. McCants is well versed in collecting and preserving evidence. His structural fire and explosion experience on scene for various types of occupancies has given him working knowledge of building construction, fire behavior, and post investigation techniques for analyzing damage assessment and fire cause and origin.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire and Explosion Investigator, National Association of Fire Investigators 2012
Certified Arson / Explosive Investigator, Robert Pressley Institute of Criminal Investigations 1999
Associates of Sciences degree Solano Community College, 2000

EMPLOYMENT HISTORY

2013 – Present	Rimkus Consulting Group, Inc.
2011 – 2013	G4S Compliance and Investigations, part-time fire investigator
1985 – 2011	Solano County Sheriff's Office



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
3620 Horizon Drive, Suite 200
King of Prussia, PA 19406
(888) 623-1460 Telephone
(610) 941-1288 Facsimile

April 6, 2017

Re: RCG File No:

	47702440
LLV:	4303286
VMF Location:	680 US Highway 130 in Trenton, New Jersey
Subject:	Preliminary/Final Report

Dear

On February 16, 2017, Rimkus Consulting Group, Inc. was requested to examine the 1994 Grumman LLV 4303286, VIN 1GBCS1049R2909463. The vehicle was examined at the USPS Trenton VMF located at 680 US Highway 130 in Trenton, New Jersey. The fire incident reportedly occurred along the carriers' route in Freehold, New Jersey on February 8, 2017.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on February 24, 2017. Our work to complete this assignment was performed by Fire Consultant Jonathan Sivils, IAAI-CFI. This report and case was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. An analysis of the observable fire patterns and physical evidence indicated that the specific area of fire origin within the engine compartment was on the left side of the engine compartment.

The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the damage and the lack of discernible physical evidence.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The exterior examination of the vehicle revealed that the aluminum exterior had sustained severe damage due to thermal heating that included the hood, driver's side front fender, mail side front fender and the vehicle's roof above the mail side compartment. All of the vehicle's glass had failed due to thermal heating. The majority of the front tires had been consumed by the fire.

Interior Inspection:

The mail side compartment of the vehicle was examined and fire damage was observed throughout. The majority of the combustible materials had been consumed by the fire. Examination of the interior of the vehicle revealed the most severe fire damage had occurred to the front of the vehicle. The dashboard had melted and was consumed. All of the electrical wiring and other components that were housed within the dashboard were severely damaged. The electrical wiring that could be examined did not display any physical evidence of adverse electrical activity.

Engine Compartment Inspection:

The engine compartment of the vehicle was examined, and we observed that the majority of the combustible materials had been consumed by the fire. The soft metals along the driver's side had failed and/or softened due to thermal heating. The most significant fire damage was observed along the top of the engine. This was consistent with the fire originating along the driver's side. Fire damage was observed throughout the engine compartment with the most severe damage in the compartment located along the rear of the engine closest to the firewall on the left side. Nearly all plastic and rubber engine components were consumed. The air filter components were also consumed.

The fuel system was examined and revealed it to be the original GM fuel filter system which was severely damaged. The fuel lines were routed along the rear of the engine. The filter was intact but all combustible fuel lines to the engine were consumed. The battery for the vehicle is located at the front right side of the engine compartment and had sustained severe fire damage. All battery cables remained intact with no signs of

adverse electrical activity. The starter was examined and found to be intact on the left side of the engine. The electrical conductors for the starter revealed they were intact and did not reveal any signs of adverse electrical activity.

Undercarriage Inspection:

Examination of the undercarriage revealed distortion to the paint closer to the front indicating heat travel from the engine compartment area or front of vehicle. The frame rail components are the original GM. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed it was consumed by fire and was not able to be examined.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage, witness statements and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment along the left side. The specific ignition sequence and cause of the fire could not conclusively be determined at this time due to the amount of damage sustained to the vehicle.

Contributing Factors:

This vehicle had numerous ignition coils and modules installed in preceding two years.

Evidence Collected:

No evidence was collected.

Interviews:

On February 24, 2017 an interview was conducted via phone with the driver of the vehicle. Mr. reported the following information:

- On the day of the fire at approximately 5:15 P.M., the vehicle started running rough.
- Mr. stated the gas pedal dropped to the floor and he immediately smelled something burning. He opened the hood and saw a large amount of fire in the engine compartment.

- Mr. called 911 to report the fire.
- No other issues or problems were reported with the vehicle on the day of the fire.

Service Records:

A review of the service records for the involved LLV indicated that it was recently serviced. The listed service stated "Ignition Module/Coils" repair. A repair was listed as "coils & module VPO". These listed repairs could not be conclusively eliminated as being a contributing factor for the fire. There were no other listed recent repairs that appeared to be consistent with the area of origin for the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jonathan K. Sivils

Jonathan K. Sivils, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

April 6, 2017
RCG File No. 47702440

Photograph 1

Vehicle with tarp in place.



Photograph 2

Front of vehicle.



April 6, 2017
RCG File No. 47702440

Photograph 3
Right front of vehicle.



Photograph 4
Left rear of vehicle.



April 6, 2017
RCG File No. 47702440

Photograph 5

Overall of vehicle remains.



Photograph 6

Underside of vehicle looking back.



April 6, 2017
RCG File No. 47702440

Photograph 7

Underside of vehicle looking towards the front.



Photograph 8

Engine compartment.



April 6, 2017
RCG File No. 47702440

Photograph 9

Engine compartment from left side.



Photograph 10

Engine compartment from right side.



April 6, 2017
RCG File No. 47702440

Photograph 12

Remains of battery on right side.



Photograph 13

Remains of fuel lines.



April 6, 2017
RCG File No. 47702440

Photograph 14

Area of origin along left side.



April 6, 2017
RCG File No. 47702440

CVs



Jonathan Sivils, IAAI-CFI, FIT, CFEI Fire Consultant

Mr. Sivils is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, as well as a Fire Investigation Technician (IAAI-FIT) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). He also holds an Associate of Science Degree in Fire Protection Technology. In a career spanning more than 25 years in the fire service, he has investigated and determined the origin and cause of more than 800 fires, to include commercial structures, residential structures, vehicles, marine and heavy equipment. He has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Sivils is a court-qualified expert witness in Criminal and Civil proceedings. Mr. Sivils has extensive training in fire and criminal investigations.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S Fire Protection Technology – Americus University, Washington D.C. – 2002
Bucks County Fire Chiefs and Firefighters Association
Bucks County Fire Marshal Association
International Association of Arson Investigators
National Association of Fire Investigators
National Fire Protection Association
Pennsylvania Association of Arson Investigators

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2012 – 2015	Donan Engineering Company, Inc.
2007 – 2012	Bucks county Fire Marshal Office, Bucks County, Pa
2005 – 2007	U.S. Department Of Defense Fire and Emergency Services
2009 – 2010	NEFCO Fire Investigations, Philadelphia, Pa
2003 – 2005	U.S. Department of Homeland Security
1998 – 2003	U.S. Department Of Defense Fire and Emergency Services
1993 – 2010	Penndel Fire Company, Penndel, Pa



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
6374 NW 97th Avenue
Doral, Florida 33178
Telephone: (786) 920-0935
Certificate of Authorization No. 8301

February 13, 2020

Re: RCG File No: 100024799
LLV Number: 4303462
VMF Location: 4850 Post Office Road Ft. Pierce, Florida
Subject: Preliminary/Final Report

Dear

On January 16, 2020, a fire involving USPS LLV 4303462 reportedly occurred while the vehicle was being driven, shortly after the vehicle had been refueled during the mail delivery route. The vehicle was manufactured in 1994 and was a Grumman model LLV-94 RH with VIN: 1GBCS1043R2909372 and a Chevrolet 2.2 L, four-cylinder engine.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Ft. Pierce VMF located at 4850 Post Office Road in Ft. Pierce, Florida. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on January 23, 2020. The vehicle examination was conducted by Fire Consultant Robert Hernandez, IAAI-CFI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The vehicle sustained moderate to severe fire damage to the engine and interior compartment from a fire originating within the interior compartment.
2. The area of origin was determined to have been on the mail side of the engine compartment.

3. The specific ignition sequence and cause of the fire was inconclusive due to the severity of damage in the area of origin; however, the possibility that adverse electrical activity occurred between the ignition coil pack and one of the spark plug wires causing sparks could not be eliminated as the potential cause of the fire.
4. The vehicle had been misfiring earlier in the mail delivery route indicating a potential problem with the ignition coil or connections.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The front grill lights and driver side quarter panel were observed with moderate fire damage and were mostly intact. The mail side quarter panel and the hood were consumed by the fire. The windshield and roof, above the operator's compartment, were observed to be completely burned through. Both doors were observed with minor to moderate smoke and soot damage. The fire damage diminished toward the rear of the vehicle except for severe smoke and soot damage observed near the top of the rear overhead door, indicating the door was open at the time of the fire. All four tires were observed to be intact except for moderate fire damage observed on the left mail side, front tire, that was positioned below the area of origin. The brakes, bearings and wheel hubs were intact on all the tires and were eliminated as potential causes of the fire. Exterior fire patterns indicated the fire originated on the mail side of the engine compartment above the level of the tires.

Interior Inspection:

The rear interior of the cargo compartment was observed with moderate smoke and soot damage and minor fire damage near the opening to the interior compartment. Where fire patterns indicated the fire had extended from the direction of the engine compartment.

The interior operator's compartment was observed with moderate to severe fire damage with most of the damage observed along the engine compartment bulkhead. The front windshield and roof, constructed with lightweight aluminum, had completely burned through and were consumed by the fire. The front half of the aluminum mail tray was melted, as was the combustible material on the driver's seat, with fire patterns indicating this was due to an extension of the fire from the engine compartment.

The driver's console and dashboard sustained severe fire damage, exposing the electrical conductors that extended from the fuse panel, which were positioned on the underside of the dashboard towards the engine control module (ECM), which is positioned in the center of the dashboard. The insulation on the electrical conductors

along the dashboard were closely examined and although the insulation had melted, no evidence of adverse electrical activity was observed on the conductors or other components including the ECM. The fan and heater core motors positioned along the bulkhead, toward the mail side of the compartment, were observed with moderate fire damage and were mostly intact. Fire patterns and witness statements indicated the fire did not originate within the interior compartment.

Engine Compartment Inspection:

The entire engine compartment was observed with severe fire damage; however, the most severe fire damage was observed on the mail side of the compartment.

The radiator, fan and engine driven components, positioned in front of the engine, sustained moderate fire damage and were observed with the least amount of damage in the engine compartment. The components were mostly intact and fire patterns indicated the fire did not originate in this area.

The components on the driver side of the engine compartment were observed with moderate to severe fire damage. The battery was observed to have the exterior cover melted; however, the interior cells and the battery terminals were intact with no evidence of adverse electrical activity observed.

The battery cables extending toward the starter and alternator were examined and observed with minor to moderate damage. The vehicle was equipped with a 2.2-liter gasoline engine with a high output ignition coil. The ignition coil pack, positioned along the driver side of the engine, was observed with melting of the outer cover; however, no evidence of adverse electrical activity was observed on the ignition coil pack and no indications that the fire started in this area were observed. However, the coil wires connecting to the individual spark plugs were completely consumed by the fire or possible adverse electrical activity.

Fire patterns indicated the fire originated from this side of the engine apartment.

Undercarriage Inspection:

The underside of the vehicle was observed with no damage from the engine compartment bulkhead toward the rear, including the brakes, bearings and tires and engine fuel lines. Minor fire damage was observed below the engine compartment as most of the fire damage in the engine compartment was higher in the space and no evidence was observed to indicate the fire originated on the underside of the vehicle.

Fuse Panel Inspection:

The fuse panel located below the driver dashboard/front counsel sustained severe fire damage. Most of the combustible plastic material on the fuse panel was observed to be

melted but, was mostly intact with no evidence of adverse electrical activity observed to the fuse panel.

Area of Fire Origin:

The most severe fire damage was observed on the mail side of the engine compartment where most of the components had melted or were consumed by the fire. An examination of an exemplar vehicle indicated that various rubber hoses, air filters, hydraulic lines and the heater core casing, mostly constructed with plastic covers or rubber, that were easily consumed by the fire, had been in this area. The fuel lines on the 2.2 L engine extended along the left underside of the vehicle before turning at a 90-degree angle along the engine compartment bulkhead toward the rear of the engine. The fuel lines were observed to be intact with no indications of leaks or that the fuel lines had been the cause of the fire.

The carrier had called in earlier in the day to report that the vehicle had not been running right and seemed to be misfiring. However, the issue cleared up and reportedly had been running fine throughout the mail delivery. The spark plug wires extended from the ignition coil pack on the driver side of the engine to the cylinders on the mail side. The plug wires were not found in the fire debris, although the spark plugs and plug boots were observed to be mostly intact. It is possible that adverse electrical activity occurred due to a malfunction of the ignition coil pack or an arcing event on the coil wires causing the plug wires to overheat, ignite and extend to nearby combustible materials.

Potential Contributing Factors:

A bad ignition coil pack, spark plugs, wires or other causes may have caused the system to overheat and overheat the plug wires, leading to a fire. Oil on the lower half of the engine block may have made it easier for the fire to ignite and extend in the area of origin.

Evidence Collected:

No evidence was collected as the remaining condition of the components within the area of fire origin would unlikely reveal any relevant data from testing.

Interviews:

On January 24, 2020, a phone interview was conducted with the carrier of LLV 4303462. During the interview Mr. provided the following information:

- Mr. stated this is the normal vehicle that he had operated for the last 5 to 6 years.

- He stated that the vehicle started fine prior to his starting the mail route at approximately 10:45 AM; however, when he put the vehicle in gear, as he was leaving the post office, the transmission sounded like it was revving very high and the vehicle was sluggish.
- He stated the vehicle did not seem to be shifting gears well.
- At approximately 11:00 AM he called his supervisor, Ms. , to tell her the vehicle was not running well.
- She told him they didn't have any spare vehicles at that moment and that she would call him when they had another vehicle available.
- He stated that she called him at approximately 2:30 PM saying they had another vehicle, but by now Mr. said the vehicle was running fine.
- He finished his route at approximately 4:00 PM and went to a nearby gas station to add fuel because the vehicle was nearly empty.
- He stated that he had not filled up the tank in the morning and had started with approximately half a tank.
- He stated that he went to BP commercial gas station located on Highway 70 East and Northeast 128th Avenue to fill up the vehicle with regular unleaded gasoline.
- He stated that he did not over fill and shut it off once the nozzle clicked.
- He thinks he put in approximately 12 gallons of fuel.
- He stated that he had been driving on the highway at approximately 55 miles per hour for approximately 10 minutes, on the way back to the post office, when he saw smoke from the front of the vehicle.
- He stated he did not see any warning lights on the dashboard, he did not smell fuel and did not notice any unusual sounds prior to the fire.
- He immediately pulled over to the side of the road and another person, driving behind him, also pulled over to help him.
- He stated at that point he only saw smoke from the engine compartment.
- The other driver called 911 and assisted him with removing the mail from the rear cargo area.
- While removing the mail, he now saw flames from the engine compartment.
- They removed the rest of the mail and waited for the fire department to arrive.

Service Records:

A review of service records going back one year revealed that the vehicle had not had many mechanical problems within the last year.

- October 4, 2019 – Vehicle would not start.
- September 30, 2019 - The last preventative maintenance inspection was conducted; included an oil and filter change.
- July 18, 2019 - Preventative maintenance inspection was conducted.
- February 12, 2019 – The vehicle stalled and would not restart. Reinstalled a good used battery.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Robert Hernandez

Robert Hernandez, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

February 13, 2020
Rinkus File No. 100024799

Photograph 1

View of the front, right side of the LLV. Note the direction of the fire's extension.



Photograph 2

View of the rear, cargo area. Note that other than the smoke and soot on the rear cargo door, most of the fire damage was observed at the front of the LLV.



Photograph 3

View of the interior, operator's compartment. Note the fire extended from the engine compartment.



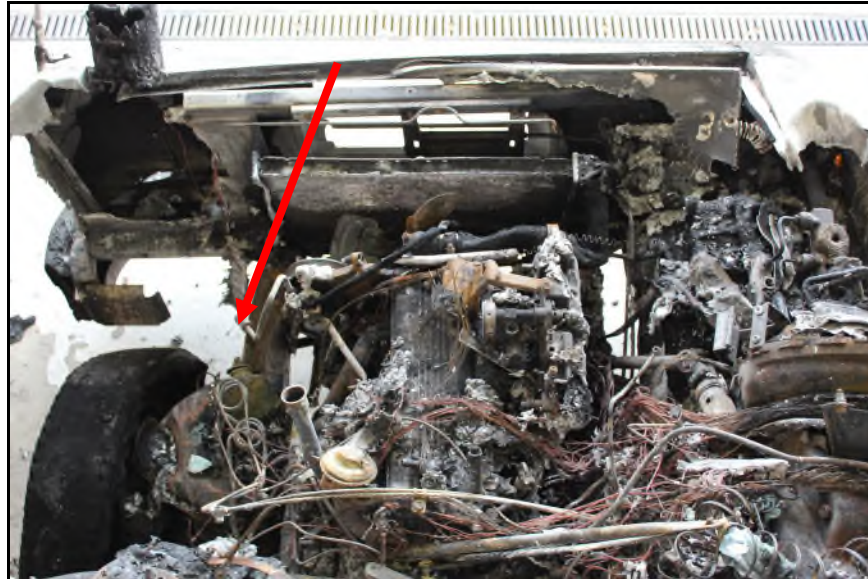
Photograph 4

View showing the fire damage on the mail side of the vehicle. Note the front quarter panel was completely burned through.



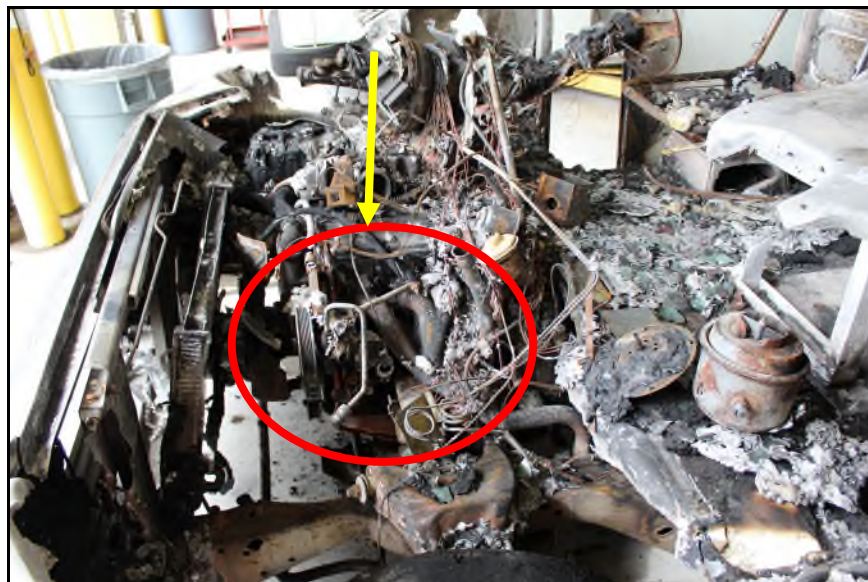
Photograph 5

Overview of the engine compartment. Note the severity of damage on the left side where most of the components were consumed by the fire.



Photograph 6

Another view of the mail side of the engine compartment. Note the loss of components and area where the ignition coil wires came across the engine (yellow arrows).



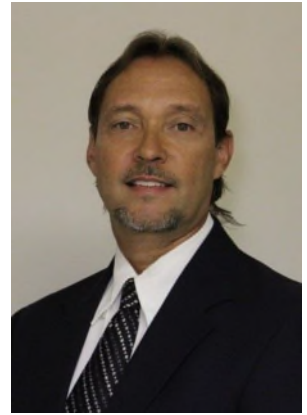
Photograph 7

View of the ignition coil pack positioned on the opposite side of the engine.



February 13, 2020
Rinkus File No. 100024799

Curriculum Vitae



Robert Hernandez, CFI, CFEI

Fire Consultant
Fire Division

Background

Mr. Hernandez holds a A.S. degree in Fire Science. He is also a Certified Fire Investigator with the International Association of Arson Investigators (IAAI-CFI) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI) as well as a licensed Fire Investigator, Licensed Fire Inspector and Licensed Private Investigator in Florida.

He is a member of Florida Task Force 2 (FLTF2) and has extensive experience in Urban Search and Rescue including structural collapse, confined space and vehicle machinery extrication.

He served the City of Miami for 34 years as a firefighter, paramedic and investigator and with the City of Miami's Technical Rescue Team. As a member of the Fire Investigation Unit, Mr. Hernandez investigated and determined the origin and cause involving commercial structures, residential structures, vessels and vehicles. He collaborated with multiple agencies including the State Fire Marshal, Alcohol, Tobacco and Firearms (ATF), local police, insurance companies and legal agencies during large loss incidents.

Contact Information

(954) 428-1422

rhernandez@rimkus.com

5201 Blue Lagoon Drive,
Suites 846 and 851
Miami, FL 33126



Rimkus Consulting Group, Inc.
9125 Guilford Road, Suite 108
Columbia, Maryland 21046
(877) 872-2999 Telephone
(410) 872-9111 Facsimile

February 12, 2019

Re: RCG File No: 47510607
LLV Number: 4303652
VMF Location: 60 West Oliver Street Baltimore, Maryland
Subject: Preliminary/Final Report

Dear

On January 5, 2019, it was reported that a fire occurred in a US Postal Service vehicle located at 525 Eikon Lane in Westminster, Maryland. Rimkus Consulting Group, Inc. was retained to examine LLV# 4303652 VIN# 1GBCS1047R2909603. The inspection of the vehicle occurred on January 29, 2019, at the Baltimore VMF.

In the course of our work, the vehicle was inspected and photographed, maintenance records and a written statement by the carrier were reviewed, and maintenance personnel were interviewed. Our work to complete this assignment was performed by Fire Consultant Charles W. Feeley, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated within the engine compartment of the involved LLV.
2. The specific area of origin was at and around a battery cable routed across the engine that sustained an adverse electrical event.

3. The specific ignition sequence and cause of the fire was determined to be an adverse electrical event at the large diameter battery cable that was identified routed through a retaining P-clamp directly above the alternator. The cable exhibited physical evidence consistent with adverse electrical activity and the cable was severed at the retaining clamp. The retaining clamp exhibited physical evidence consistent with adverse electrical activity and arcing. The source of the fire's ignition was resistance heating of the battery cable caused by a direct short between the cable and the retaining clamp.
4. Wear and degradation of components allowed an unfused adverse electrical event to develop at the battery hot lead where it was in direct contact with the retaining clamp above the alternator within the engine compartment.

Observations

Exterior Inspection:

For the purpose of this report, the right side of the vehicle refers to the driver's side of the vehicle, and the left side refers to the mail side of the vehicle. Severe fire damage was observed to the front of the vehicle. The hood assembly was missing as was the windshield and framing around the windshield. The top of the vehicle had also been severely fire damaged, with the majority of the top having collapsed into the cargo area.

Examination of the right side of the vehicle revealed severe fire damage from the leading edge of the cargo area to the rear post. The right front fender had been partially consumed. The right front tire was severely fire damaged, with a portion of the burned tire still attached to the rim. Severe fire damage was observed to the upper portion of the driver's door frame. The right rear tire was still intact.

Examination of the rear of the vehicle revealed severe fire damage along the upper half of the vehicle. The rear door had collapsed into the interior of the cargo area.

Examination of the left side of the vehicle revealed severe fire damage to the upper portion of the cargo area. The left door and the left front fender had been consumed. The left rear tire was intact, but the left front tire had been partially consumed.

Interior Inspection:

Severe fire damage was observed throughout the interior of the vehicle. All combustible materials within the interior compartment had been consumed by the fire. The bulkhead between the engine compartment and interior compartment had been consumed by the fire. The fuse panel that had been positioned on the right side near the bulkhead had also been partially consumed. The aluminum bulkhead panel between the interior

compartment and the cargo area had been partially consumed. The cargo compartment had sustained fire and heat damage throughout.

Engine Compartment Inspection:

This vehicle was equipped with a 2.2L fuel injected engine. Severe fire damage was observed throughout the engine compartment. Examination of the standard ignition coil revealed that it had sustained external heat damage, but for the most part it was intact and eliminated as the cause of the fire. The electric control module (ECM) positioned near the center of the bulkhead sustained fire and heat damage. No evidence of adverse electrical activity was observed.

The alternator displayed heat damage. The insulation on main conductors to the alternator had been consumed. The conductors were secure. The cable P-clamp positioned on the bracket above the alternator displayed severe damage.

The battery positioned in the right front corner of the engine compartment had sustained more severe fire damage to the top and side nearest to the block. The fuel rail sustained heat damage but remained intact. The flexible fuel lines had been consumed.

The battery cables had become dislodged from the battery. The negative cable was intact and secured to the frame. The positive cable, which ran from the battery to the starter, was severely damaged in one area on the right side of the engine. The cable had been routed through an aluminum screw mounted cable P-clamp, and a section of the cable was missing where it had passed through the cable P-clamp. The remaining ends of the severed cable displayed beading. Examination of the cable P-clamp revealed that the positive cable had arced through the back of the clamp. The P-clamp displayed a loss of mass to the rear and copper beads were present within the cable P-clamp.

Undercarriage Inspection:

Examination of the undercarriage revealed severe fire damage in the area of the engine compartment. The fire damage observed was the result of burning components from the engine compartment dropping down and impacting the undercarriage of the vehicle.

Fuse Panel Inspection:

The fuse panel was examined, but was too severely damaged by the fire to evaluate.

Area of Fire Origin:

The fire originated on the right side of the engine compartment, where the positive battery cable had been routed through an aluminum screw mounted cable P-clamp.

Potential Contributing Factors:

The cause of the fire was determined to be the result of the positive battery cable chaffing against the aluminum screw mounted cable P-clamp, exposing the cable to the cable P-clamp. The positive cable then arced to the cable P-clamp, ignited the insulation around the positive cable, and then progressed to other nearby combustible materials.

Evidence Collected:

No physical evidence was collected at the time of our initial examination.

Interviews

The carrier was interviewed on February 1, 2019, and provided the following information. He began his route at approximately 12:00 P.M. on January 15, 2019. He heard a loud noise under the hood. He saw flames on the right side of the vehicle on the ground in the area of the steering column. He did not open the hood. The previous driver had reported gas leaks numerous times. He began driving the involved vehicle approximately one year prior to the fire. He fueled the vehicle at the beginning of his shift. He smelled gasoline after fueling.

Service Records

The provided service records did not indicate that any work had been performed in the area of the involved conductor. The last recorded mileage for the LLV was 238,668 miles. It is inconclusive if the maintenance performed contributed to the chaffing of the battery cable or the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles W. Feeley

Charles W. Feeley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

February 12, 2019
RCG File No. 47510607

Photograph 1

A view of the exterior front of the vehicle.



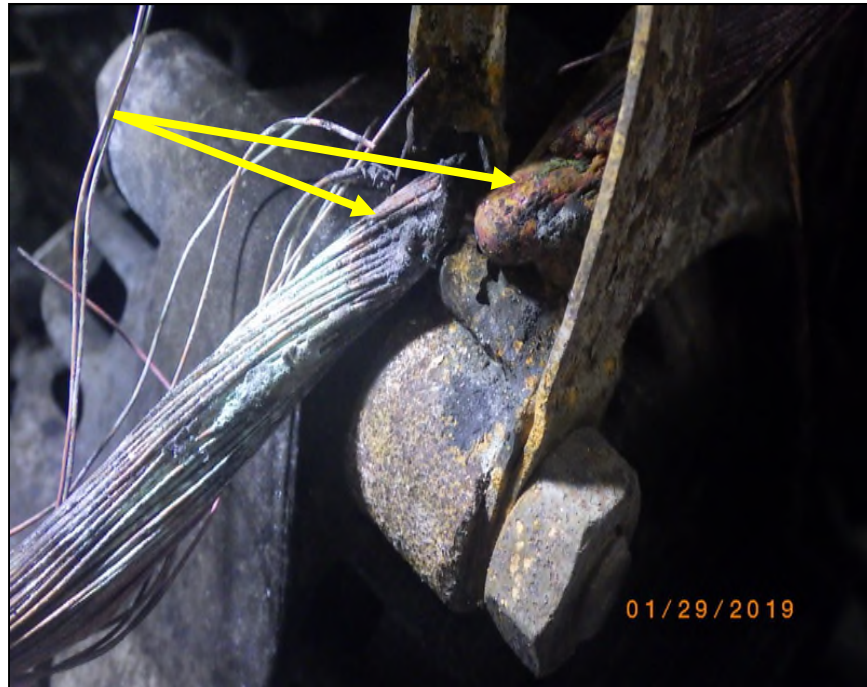
Photograph 2

A view of the right side of the engine compartment.



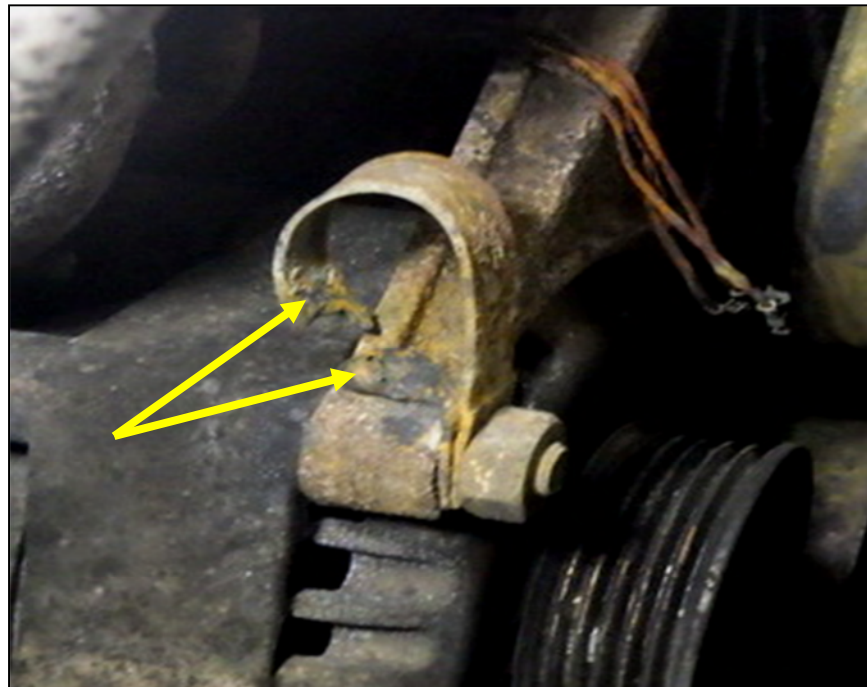
Photograph 3

A view of the main conductor to the starter at the cable P-clamp.



Photograph 4

A view of the cable P-clamp.



Curriculum Vitae



**CHARLES FEELEY, I.A.A.I., C.F.E.I., C.F.I., P. I.
FIRE CONSULTANT**

Mr. Feeley had been employed by the Baltimore City Fire Department for 35 years. In this capacity he had been involved in many different emergency positions including Fire Fighter, Lieutenant, Captain, Chief Safety Officer, Battalion Commander and Division Chief.

Mr. Feeley has completed numerous educational seminars and continuing educational courses.

Mr. Feeley investigated over 550 fires in four years as an investigator and in excess of 5,000 fires as an incident commander at fire scenes. He has given expert testimony in civil and criminal court cases. He supervised the Office of the Fire Marshal in Baltimore City. He also supervised special projects such as the Arson Task Force, juvenile fire setters program, an educational intervention program and public education programs.

At Rimkus Consulting Group, Mr. Feeley has conducted over 500 fire origin and cause determinations that include, but are not limited to, assignments involving residential, commercial, industrial, passenger and commercial vehicles, marine, farm implement/equipment, appliance and electrical equipment related fires.

Mr. Feeley has been recognized for his achievements by being the recipient of awards that include Distinguished Unit Citation, Meritorious Conduct Award, Exemplary Performance, and Distinguished Service Award.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

National Fire Academy
National Nuclear Security Administration
United States Department of Justice, New Mexico Tech.
Department of Homeland Security
National Association of Fire Arson Investigators
United States Department of Justice, Anniston AL.
National Association of Fire Investigators.
Certified Fire and Explosion Investigator, N.A.F.I Certification
Certified Fire Investigator, International Association of Arson Investigators
Licensed as a Private Investigator in the State of Delaware

EMPLOYMENT HISTORY

2006 – Present	Rimkus Consulting Group, Inc.
1970 – 2006	Baltimore City Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
7501 South Quincy Street, Suite 160
Willowbrook, Illinois 60527
(866) 746-5871 Telephone
(630) 321-1847 Facsimile

March 4, 2019

Re: RCG File No: 50905982
LLV Number: 4303913
VMF Location: 500 Fullerton Avenue Carol Stream, Illinois
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 4303913 with VIN 1GBCS1044R2910014. The fire incident reportedly occurred at 417 IL-173 #101 in Antioch, Illinois on October 9, 2018.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on October 22, 2018. Our work to complete this assignment was performed by Fire Consultant David A. Mager, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the interior compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the rheostat headlamp switch positioned in the left side of the dashboard.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, we observed all of the LLV tires were intact and of the same make and size. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. Both front doors were intact and secure. The cargo door was locked in the closed position. No fire damage was observed to the exterior of the vehicle.

Interior Inspection:

Examination of the interior of the vehicle revealed fire damage to the dashboard at the headlamp switch. The surfaces of the interior were covered with fire extinguishing agent. Fire damage was limited to the dashboard and Rheostat headlight switch.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2 L4 cylinder engine. The engine was fuel injected with four separate fuel injectors. The standard ignition for this engine was a high output ignition coil. There was no fire damage to the engine compartment observed.

The battery for the vehicle was located at the front right side of the engine compartment. The battery, the battery terminals, and battery cables were examined. The battery cables had been cut by the fire department; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

Examination of the fuse panel revealed it to be intact and undamaged.

Area of Fire Origin:

Based on the observed pattern of fire damage and systemic evaluation of the remaining physical evidence, it was determined that the fire originated at the headlamp switch.

Potential Contributing Factors:

We observed excessive heating near the rheostat of the switch. A high resistance electrical heating event could not be eliminated as a potential cause for this fire.

Evidence Collected:

The headlamp switch was collected for laboratory examination.

Interviews:

In an interview with the mail carrier stated that he was near the end of his route. He was driving through the Walmart parking lot and smelled smoke but could not locate the source. He went to his next stop and exited the vehicle. When he opened the rear cargo door, he observed smoke coming from the dash. He went into the Payless store and retrieved a fire extinguisher. When he got back to the vehicle he observed a 4 to 5 inch flame coming out of the dashboard above the headlamp switch. He extinguished the fire while a bystander called 911.

Service records:

A review of the provided service records for the involved LLV was conducted. There were no indications of recent service or repairs that would have caused or contributed to the cause of the fire.

Lab Exam:

The headlamp switch was examined by Mark H. Nelson, CFEI, CVFI, P.E., in the Charlotte, North Carolina facility on November 19, 2018. The wires and the electrical connections at the rear of the headlamp switch were not fire damaged and there were no issues observed. The fire damage to the headlamp switch was contained to the area of the rheostat near the middle of the switch. As the light switch is rotated, the rheostat varies the current through the switch by where a contactor engages with the rheostat spring. The current passes through the spring and back to the switch through a ring and contact arm. The ring and contact arm were intact, but the plastic around the ring was damaged consistent with high resistant heating between the ring and contact arm.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Mager

David A. Mager, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

March 4, 2014, 2019
RCG File No. 50905982

Photograph 1

1994 LLV 4303913, VIN 1GBCS1044R2910014.



Photograph 2

Overall view of the passenger compartment.



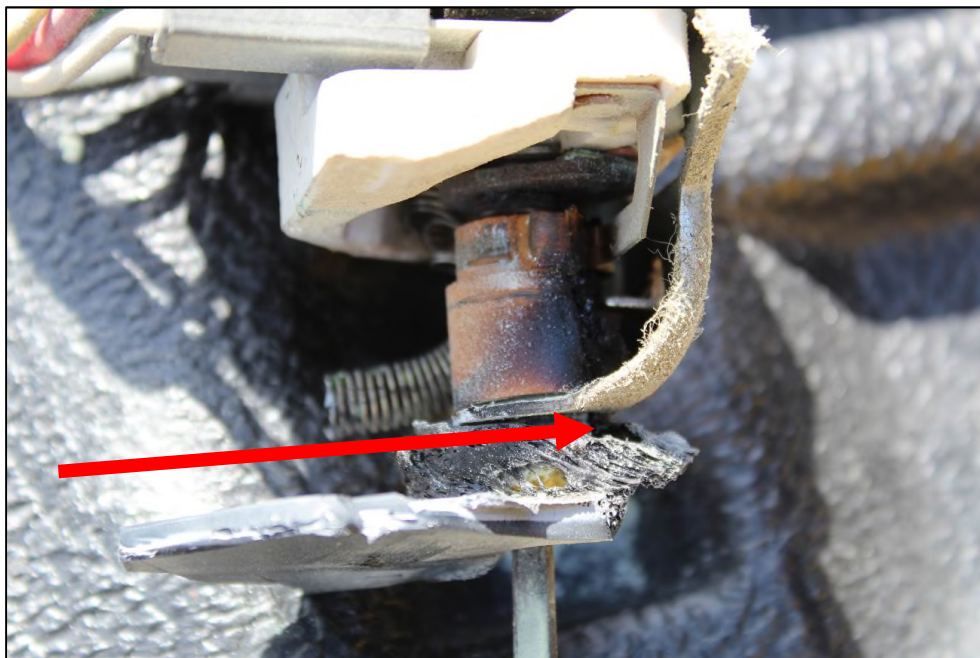
Photograph 3

Fire damage at headlamp switch.



Photograph 4

Overheating damage to headlamp switch.



March 4, 2014, 2019
RCG File No. 50905982

Curriculum Vitae



DAVID A. MAGER, CFI FIRE CONSULTANT

Mr. Mager is an International Association of Arson Investigators Certified Fire Investigator, Illinois State Fire Marshall Office Certified Fire Investigator, Certified Fire Officer II, Hazardous Materials Technician "B" and a Illinois Department of Public Health Certified Paramedic.

Mr. Mager has an extensive professional background in the areas of firefighting and fire investigations, and has investigated over five hundred fires. His professional experience includes fire and explosion investigations, fire protection and detection system inspections as well as hazardous materials mitigations.

As an International Association of Arson Investigators Certified Instructor and a Certified Instructor II through the Illinois State Fire Marshall Office, Mr. Mager has conducted numerous live fire training exercises for Fire Fighters and Fire Investigators using authentic room furnishings as well as classes on fire behavior and evidence preservation.

Mr. Mager is a Retired Deputy Fire Chief and had been the Training Officer with the Midlothian, IL. Fire Department. He was an Assistant Team Leader for the Southwest Hazardous Materials Response Team and routinely responded to fire and hazardous materials incidents, fire investigations and conducted life safety inspections within the municipality.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator - Illinois State Fire Marshall Office
Certified Fire Investigator - International Association of Arson Investigators
Certified Instructor – International Association of Arson Investigators
Certified Fire Officer II – Illinois State Fire Marshall Office
Certified Hazardous Materials Technician "B" - Illinois State Fire Marshall Office
Certified Fire Department Incident Safety Officer – Illinois State Fire Marshall Office
International Association of Arson Investigators – Member
International Association of Arson Investigators (Illinois Chapter) – Member

EMPLOYMENT HISTORY

2008 – Present	Rimkus Consulting Group, Inc.
1987 – 2015	Midlothian Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
7501 South Quincy Street, Suite 160
Willowbrook, Illinois 60527
(866) 746-5871 Telephone
(630) 321-1847 Facsimile

October 17, 2018

Re: RCG File No: 50905951
LLV Number: 4304182
VMF Location: 615 6th Avenue SE, Cedar Rapids, Iowa
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 4304182, VIN 1GBCS1048R2910386. The vehicle was examined at the USPS Cedar Rapids Vehicle Maintenance Facility located at 615 6th Avenue SE in Cedar Rapids, Iowa. The fire incident reportedly occurred at an unknown location on September 25, 2018.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on October 10, 2018. Our work to complete this assignment was performed by Fire Consultant David A. Mager, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment in the area of the bulkhead on the left (mail) side of the vehicle.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a leak in the fuel injector throttle body and the atomized gasoline vapor coming in contact with a competent ignition source, in the immediate vicinity of the fuel lines or a hot surface ignition of the accumulation of engine fluids on within the engine compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. We observed that most of the vehicle structure on the passenger compartment had been consumed by fire. We observed the bulkhead of the vehicle sustained substantial fire damage near the center of the vehicle. A directional burn pattern was observed on the engine compartment hood. We observed mass loss of the hood on the mail side of the vehicle. There was no evidence to indicate that the LLV had recently been involved in a collision.

At the time of the exam, we observed one of the LLV tires was in the doorway on the mail side of the vehicle. The tire was damaged by fire and had been located at the mail side front. The tire was replaced so the vehicle could be moved. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. Both front doors had been consumed by fire. The cargo door was locked in the closed position. We observed fire damage to the exterior side of the cargo door indicating that it was open at the time of the fire.

Interior Inspection:

Examination of the interior of the vehicle revealed extensive fire damage to the driver's compartment. The dashboard had been consumed by fire. The driver seat had been consumed by fire. The front section of the mail tray had been consumed by fire.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was fuel injected with 4 separate fuel injectors. The standard ignition for this engine was a high output ignition coil.

The battery for the vehicle was located at the front right side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be fire damaged but intact; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire.

The engine compartment was observed with severe fire damage. Burn patterns indicated the fire originated near the bulkhead on the mail side of the vehicle. We observed burn patterns on the mail side of the engine extending upward from the exhaust manifold.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on an AM General frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact. We observed a "V" burn pattern on the mail side of the engine. The apex of the "V" was near the exhaust manifold.

Fuse Panel Inspection:

Examination of the fuse panel revealed extensive fire damage. We observed no visible electrical activity on the fuse panel.

Area of Fire Origin:

Based on the observed pattern of fire damage and systemic evaluation of the remaining physical evidence, it was determined that the fire originated in the engine compartment on the mail side near the bulkhead.

Potential Contributing Factors:

We observed a buildup of stain/grime on the vehicle transmission consistent with a fluid leak. A hot surface ignition of engine oil or transmission fluid could not be eliminated as a potential cause for this fire.

Evidence Collected:

No evidence was collected for laboratory examination.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no indications of recent service or repairs that would have caused or contributed to the cause of the fire.

Interviews:

In an interview with the mail carrier stated that she was parked in a customer's driveway to deliver a registered parcel. She had turned the vehicle off and exited the vehicle to deliver the parcel. When she returned to the vehicle, she observed black smoke coming from around the steering column under the dash. She started the vehicle and began to back out of the driveway. The vehicle stalled but was able to roll to the street and out of the customer's driveway. She removed mail and personal belongings from the passenger compartment. She then opened the rear cargo door to remove the mail. She observed flames coming from the engine compartment near the center of the vehicle. She indicated the flames were near the windshield but not inside the vehicle.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Mager

David A. Mager, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curricula Vitae

October 17, 2018
RCG File No. 50905951

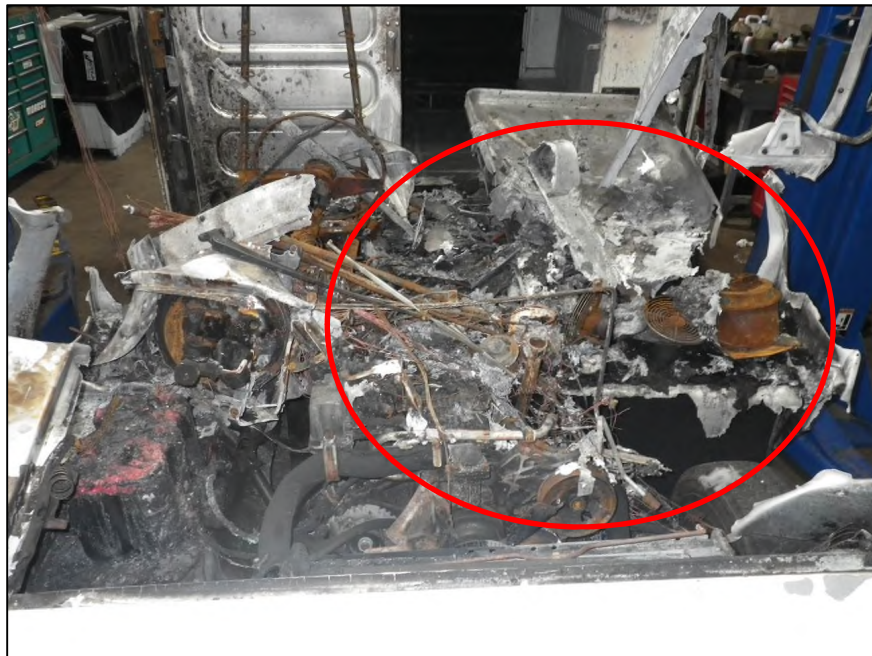
Photograph 1

1994 LLV 4304182, VIN 1GBCS1048R2910386.



Photograph 2

Overall view of the engine compartment, most severe fire damage to the mail side.



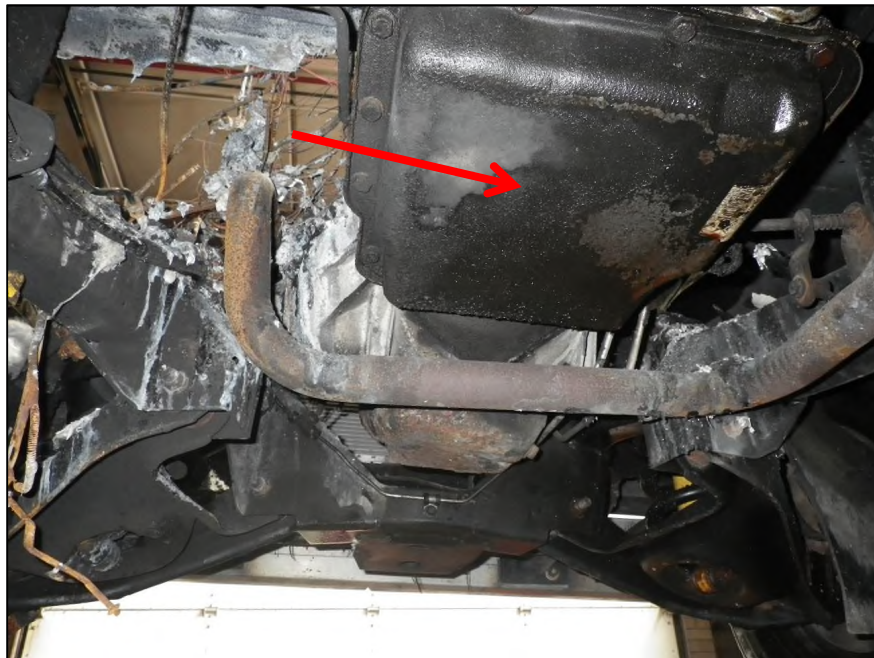
Photograph 3

Mail side of the engine and exhaust manifold.



Photograph 4

Exhaust manifold and vehicle transmission, observe the accumulation of fluid.



Photograph 5

The battery, minor fire damage observed.



Photograph 6

Fuel lines and most severe fire damage to the mail side of the vehicle.



October 17, 2018
RCG File No. 50905951

Photograph 7

Fire incident location following fire (Fire Department photograph).



Photograph 8

Observe the severe fire damage to the engine and driver's compartment.



October 17, 2018
RCG File No. 50905951

Curricula Vitae



DAVID A. MAGER, CFI FIRE CONSULTANT

Mr. Mager is an International Association of Arson Investigators Certified Fire Investigator, Illinois State Fire Marshall Office Certified Fire Investigator, Certified Fire Officer II, Hazardous Materials Technician "B" and a Illinois Department of Public Health Certified Paramedic.

Mr. Mager has an extensive professional background in the areas of firefighting and fire investigations, and has investigated over five hundred fires. His professional experience includes fire and explosion investigations, fire protection and detection system inspections as well as hazardous materials mitigations.

As an International Association of Arson Investigators Certified Instructor and a Certified Instructor II through the Illinois State Fire Marshall Office, Mr. Mager has conducted numerous live fire training exercises for Fire Fighters and Fire Investigators using authentic room furnishings as well as classes on fire behavior and evidence preservation.

Mr. Mager is a Retired Deputy Fire Chief and had been the Training Officer with the Midlothian, IL. Fire Department. He was an Assistant Team Leader for the Southwest Hazardous Materials Response Team and routinely responded to fire and hazardous materials incidents, fire investigations and conducted life safety inspections within the municipality.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator - Illinois State Fire Marshall Office
Certified Fire Investigator - International Association of Arson Investigators
Certified Instructor – International Association of Arson Investigators
Certified Fire Officer II – Illinois State Fire Marshall Office
Certified Hazardous Materials Technician "B" - Illinois State Fire Marshall Office
Certified Fire Department Incident Safety Officer – Illinois State Fire Marshall Office
International Association of Arson Investigators – Member
International Association of Arson Investigators (Illinois Chapter) – Member

EMPLOYMENT HISTORY

2008 – Present	Rimkus Consulting Group, Inc.
1987 – 2015	Midlothian Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
826 Creighton Road, Suite 101A
Pensacola, Florida 32504
(850) 475-1378 Telephone
(850) 475-9226 Facsimile
Certificate of Authorization No. 8301

August 6, 2018

Re: RCG File No: 53006706
LLV Number: 4304241
VMF Location: 100 Congress Street Mobile, Alabama
Subject: Preliminary/Final Report

Dear

On July 10, 2018, it was reported a fire occurred in a US Postal Service vehicle located at 288 Mayflower Street in Mobile, Alabama. Rimkus Consulting Group, Inc. was retained to examine LLV 4304241, VIN 1GBCS1042R2910237. The inspection of the vehicle occurred on July 18, 2018, at the Mobile VMF at 100 Congress Street in Mobile, Alabama.

In the course of our work, the vehicle was inspected and photographed, maintenance records and a written statement by the carrier were reviewed, and maintenance personnel were interviewed. Our work to complete this assignment was performed by Fire Consultant Hubert T. Peete, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 Standard for "Professional Qualifications for Fire Investigator".

Conclusions

1. The vehicle sustained severe fire damage to the engine and operator compartments from a fire originating within the engine compartment.

2. Based on the observed patterns of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated at the right side of the engine compartment.
3. The specific ignition sequence and cause of the fire was inconclusive due to the severity of damage in the area of origin. However, the possibility of a failure at the fuel injection system could not be eliminated as a potential cause of the fire.

Observations

Exterior Inspection:

The vehicle was extensively fire damaged across the front. A large section of the hood and the windshield were completely consumed by the fire. The left and right front quarter panels were both heavily fire damaged and a section of each had burned completely. The fire was beginning to extend down both sides past the entry doors when the fire was extinguished. The most significant damage involved an area at the right side of the engine compartment.

Based on the fire patterns observed, it was determined the fire initiated within the engine compartment near the bulkhead/dashboard then progressed into the operator's compartment through the windshield and bulkhead.

Interior Inspection:

The front of the interior was severely burned with the worst damage along the right side of the dash. The dash suffered mass loss to the combustible components and had collapsed. The fuse panel was identifiable but severely fire damaged. The damage to the panel was consistent with flame exposure from the engine compartment and it was not the cause of the fire. The headlamp switch was recovered from the debris on the floorboard. It also was severely fire damaged but the ceramic plate was intact and the male electrical connectors did not reveal any evidence of adverse electrical activity. The mail storage area was heat damaged and smoke stained throughout. The fire movement patterns were consistent with the fire extending through the bulkhead to the dash on the right side from the engine compartment.

Engine Compartment Inspection:

The vehicle was equipped with a 2.2 liter, four-cylinder fuel injected engine. The engine was equipped with a GM throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment was severely burned and most of the combustible components were completely consumed during the fire. The least damage was observed across the front and along the left side. The wiring harnesses, extending through the bulkhead and throughout the engine compartment, were all heavily fire

damaged and the insulation was completely consumed during the fire. The brake system, battery, and large electrical conductors were all severely fire damaged. The fuel system is severely fire damaged and the injector system was fire destroyed. All of the combustible lines were consumed during the fire. Due to this extensive damage the components of the fuel system could not be eliminated as a cause of the fire. The patterns of burning were consistent with the fire originating at the right side of the engine compartment in the area of the fuel injection system. The rapid development of the fire and the engine running "rough" as reported by the mail carrier would be consistent with the ignition and burning of an ignitable liquid such as gasoline.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle, except for a limited area of the frame below the engine compartment that appeared to have been caused by drop down from above. The fuel lines on the undercarriage were intact along the frame rail toward the fuel injections system. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage.

Fuse Panel Inspection:

The fuse panel was identifiable but heavily fire damaged. The damage to the panel was consistent with flame exposure from the engine compartment. It was not the cause of the fire.

Area of Fire Origin:

The fire originated at the right side of the engine compartment in the area of the fuel injection system.

Potential Contributing Factors:

The age and mileage of the vehicle were a likely contributing factor of the fire. According to the maintenance records, there had not been any reported problems or repairs made to the fuel system within the last two years.

Evidence Collected:

No evidence was collected during the inspection.

Carrier Statement:

The mail carrier reported the vehicle was running "rough". He turned it off and after a few minutes restarted the vehicle. He began to smell smoke and then saw fire

extending through the grill between the hood and windshield. He began unloading the stored mail from the rear and had a bystander notify the fire department. His estimated time from restarting the engine until the engine compartment was engulfed in flames was five minutes.

Service Records:

A review of the service records revealed no recent repairs or service that would have contributed to the cause of the fire.

This preliminary report contains a summary of our findings and does not include a full description of the investigative tasks and methodology we took to reach our conclusions. If a full final report of findings is needed, one will be completed at the request of USPS.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Hubert T. Peete

Hubert T. Peete, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curricula Vitae

August 6, 2018
RCG File No. 53006706

Photograph 1

View of the front of the subject LLV.



Photograph 2

View of the right side.



August 6, 2018
RCG File No. 53006706

Photograph 3
View of the left side.



Photograph 4
View of the driver's position.



August 6, 2018
RCG File No. 53006706

Photograph 5
View of the dash.



Photograph 6
View of fuse panel.



August 6, 2018
RCG File No. 53006706

Photograph 7
View of the headlight switch.



Photograph 8
View of the engine compartment with origin area notated.



August 6, 2018
RCG File No. 53006706

Photograph 9

View of the left side of the engine compartment.



Photograph 10

View of the right side of the engine compartment with the origin area notated.



August 6, 2018
RCG File No. 53006706

Curricula Vitae



HUBERT T. PEETE, IAAI-CFI, CFEI, CVFI FIRE CONSULTANT

Mr. Peete began his fire service career at the age of 16 in 1983, as an Explorer Scout with his hometown fire department. He developed an interest in the origin and cause of fires early in his career and has pursued to increase his knowledge of the subject throughout most of his life. He continued as a volunteer firefighter and officer with his home town for 20-years. After attending college, he entered service with the City of Pelham Fire Department in Pelham, Alabama. He served in many capacities and retired as a company officer in December 2015, after 25-years of service.

Mr. Peete has spent the last 15-years working as a private fire consultant and has investigated over 1000 fires. He has been certified and testified as an expert witness in both Federal and Circuit courts.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

- Bachelor of Science, Public Safety Administration – Athens State University, Athens, Alabama - 1998
- Associate in Applied Science, Fire Science Management – Shelton State Community College, Tuscaloosa, Alabama – 1996
- Montevallo High School – Montevallo, Alabama - 1985

EMPLOYMENT HISTORY

2017 – Present	Rimkus Consulting Group, Inc.
2003 – 2017	Crain & Associates, Inc., Investigator
2002 – 2003	Crain Massengale, Inc., Fire Scene Technician
1990 – 2015	City of Pelham Fire Department, Fire Lieutenant
1995 – 2000	City of Montevallo Fire Department, Fire Marshal



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
921 Eastwind Drive, Suite 110
Westerville, OH 43081
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

January 24, 2017

Re: RCG File No:

LLV Number: 53602338
VMF Location: 4304528
Subject: 11800 Merriman Road in Livonia, Michigan
Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 4304528 that occurred at the intersection of Cumberland Drive and Center Street in Northville, Michigan on November 11, 2016. In the course of the work, we examined and documented the fire-damaged vehicle on January 5, 2017. The carrier/operator was interviewed at the time of this examination by telephone.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 11800 Merriman Road in Livonia, Michigan. The work to complete this assignment was performed by Fire Consultant Lancelot E. Furber, IAAI-CFI/CI. This report and case were reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was in the area of the fuel distribution system and lines and the intact manifold. Due to the severity of the fire damage, the exact point of origin could not be conclusively determined.

3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the damage in the area of origin; however, an ignition of atomized gasoline on the intact manifold could not be eliminated.

Observations

Exterior Inspection:

The exterior examination of the vehicle revealed heat and fire damage to the engine compartment and operator's compartment of the vehicle. There was minimal fire damage to the cargo compartment. The lower body, frame, and drive line revealed heat, smoke, and soot damage (**Photograph 1**).

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments was conducted working from the areas of least fire damage to the area of greatest fire damage. Our interior examination revealed severe fire and heat damage to the operator's compartment of the LLV. Examinations of the burn patterns indicated this interior damage was caused due to fire extension from the engine compartment of the LLV. There was no visible evidence to support a claim that the fire originated within the operator's or cargo compartments of this vehicle.

Engine Compartment Inspection:

Examination of the engine compartment revealed fire/heat damage throughout this area. An examination was conducted working from the areas of least fire damage to the area of greatest fire damage. Based upon heat/fire patterns the area of greatest fire damage was determined to be at the right side of the engine at the area of the fuel line/fuel rail and intake manifold (**Photograph 3**). The battery, battery cables, starter motor, and alternator were examined. There was no visible evidence to support a claim that a failure to any of these components offered an ignition source for this fire. Damage to the engine and engine components hindered any/all efforts to properly check engine fluid levels. It could not be conclusively determined due to the severity of the damage if the vehicle was equipped with a High Energy Ignition (HEI) distributor. The LLV was equipped with a GM fuel filter system.

Undercarriage Inspection:

Examination of the undercarriage was conducted. The LLV had a General Motors frame. Based upon heat/fire patterns, it was determined that the fire originated above the undercarriage within the engine compartment.

Fuse Panel Inspection:

Examination of the fuse panel, located within the operator's compartment, could not be conducted due to the amount of fire damage within this area.

Area of Fire Origin:

The area of origin was determined to be at the right side of the engine in the area of the fuel line, fuel distribution system, and intake manifold. The point of fire origin could not be determined within a reasonable degree of certainty due to the amount of fire damage within the area of origin.

Contributing Factors:

The LLV sustained severe fire damage throughout the engine compartment and the operator compartment. Conclusive contributing factors could not be determined due to the damage. Fire pattern analysis indicated that the fire originated in and around the fuel delivery system and intact manifold in the engine compartment.

Interviews:

The carrier/operator was interviewed at the time of our examination. She stated that she was operating the LLV for approximately one hour when she stopped to deliver a package. At that time, she shut off the LLV and removed the key. When she returned to the LLV, she started it and pulled away from the curb when the LLV stalled. Ms. attempted to re-start the LLV; however, it would only run for a very short period of time and then stall again. She stated that after the third or fourth time she noticed smoke coming from under the hood. She exited the LLV and called 911. While on the phone with the 911 operator, Ms. noticed flames coming from the engine compartment. Ms. stated that this was not the normal LLV which she operates. She stated prior to the LLV not starting/running, she did not have any issues with this LLV.

Evidence Collected:

No evidence/artifacts were collected at the time of the RCG examination. The LLV was recovered upon completion of our examination and remains secured at the USPS location in Livonia, Michigan.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no listed repairs or recent service that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Lancelot E. Furber

Lancelot E. Furber, IAAI-CFI/CI, CFEI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

January 24, 2017
RCG File No. 53602338

Photograph 1
Exterior.



Photograph 2
Interior.



January 24, 2017
RCG File No. 53602338

Photograph 3
Engine Compartment.



Photograph 4
Area of origin.



January 24, 2017
RCG File No. 53602338

CVs



**Lancelot E. Furber, GFireE, IAAI-CFI/CI, NAFI-CFEI
Fire Consultant**

Mr. Furber holds an Associates of Arts and Science Degree, in Fire Science, from Pikes Peak Community College and a Graduate Diploma from the Institution of Fire Engineers/Engineering Council located in London, England in addition to numerous specialized training classes in specific areas. He is a Certified Fire Investigator and Fire Instructor through the International Association of Arson Investigators, a Certified Fire and Explosion Investigator through the National Association of Fire Investigators, and is a Certified Firefighter, Certified Fire Officer and Certified Hazardous Material Operations/Technician. Mr. Furber holds certificates from Lehigh County Technical College in Automotive Technology and Residential Electrical Construction. Mr. Furber has testified as an expert witness in arbitration hearings as well as State criminal and civil courts.

Mr. Furber has an extensive background in Fire Investigation, Fire Suppression, and Vehicle Extrication. Mr. Furber is a board member of the National Fire Protection Association (NFPA) Fire Science & Technology Educators Section and the NFPA Fire Service Section. His professional experience includes computer fire modeling, forensic photography, forensic evidence collection, fire and explosion investigation, ignition scenarios and fire travel experimentation, and full scale live fire testing.

Education and Professional Associations

Associates of Arts and Science (Fire Science) – Pikes Peak Community College

Graduate Diploma – Institution of Fire Engineers/Engineering Council

Certified Fire Investigator – International Association of Arson Investigators

Certified Fire Instructor – International Association of Arson Investigators

Certified Fire and Explosion Investigator – National Association of Fire Investigators

Certified Firefighter II – PRO Board/NBFSPQ

Certified Fire Officer II – PRO Board/NBFSPQ

Certified Haz-Mat Operations/Technician – PRO Board/NBFSPQ

Certified Emergency Medical Technician

Member of: International Association of Arson Investigators; International Association of Identification; National Association of Fire Investigators; National Fire Protection Association; National Association of Subrogation Professionals; National Fire Academy Alumni Association; Professional Fire & Fraud Investigators Association; Motorsports Professional Group
Motorsports Safety Group



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
5099 Commercial Circle, Suite 100
Concord, California 94520

January 16, 2020

Re: RCG File No: 100021384
LLV Number: 4304586
VMF Location: 3780 Seaport Boulevard W. Sacramento, California
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 4304586. The vehicle was examined at the USPS West Sacramento Vehicle Maintenance Facility located at 3780 Seaport Boulevard in West Sacramento, California. The fire incident reportedly occurred at 8904 Carlisle Avenue in Sacramento, California on December 2, 2019, while it was being operated on its normal delivery route.

In the course of our work, we examined and documented the fire damaged vehicle on December 16, 2019. Our work to complete this assignment was performed by Jimmie McCants, NAFI - CFEI, Fire Consultant. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the operator's compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the Rheostat headlamp switch positioned in the left side of the dashboard.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the Rheostat switch within the headlamp switch which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the mail side and the left side refers to the driver's side.

Severe fire and heat damage were observed on the front of the vehicle to include structural mass loss. The window frame, windshield, dashboard, bulkhead and the majority of the roof structure over the operator's compartment was consumed during the fire event. The majority of the fire damage was located at the front of the vehicle.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred in and around the dashboard and bulkhead areas. The vast majority of the combustible materials in and around these areas had been consumed during the fire to include the majority of the conductors, switches and related components. Fire patterns converted to heat and smoke patterns as progress was made into the cargo compartment.

Engine Compartment Inspection:

The engine compartment was examined. Fire and heat damage was observed at the rear of the compartment and decreased in severity as progress was made away from the bulkhead. The fuel filter was intact and located inside the frame rail on the left side forward of the rear axle. The fuel system was an AC Delco model. The battery for the vehicle was located at the front right side of the engine compartment and sustained minimal fire damage from exterior fire attack. The vehicle was equipped with a 2.2 liter engine and had a standard ignition coil.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire or mechanical damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not

show any signs of failure. The fuel tank was undamaged and not leaking. The exhaust system was intact. The transmission was intact, undamaged and not leaking fluids. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

The fuse panel had sustained severe fire damage. All of the fuse panel combustible materials had been consumed during the fire. The electrical conductors and their connectors were observed with no adverse electrical event. The fuse panel was eliminated as the origin of the fire.

Area of Fire Origin:

Based on our observations and witness statements, it was determined that the area of fire origin was in the driver's compartment on the left side of the steering column at the headlamp switch.

Potential Contributing Factors:

An adverse electrical event involving the Rheostat headlamp switch was the contributing factor to the cause of the fire.

Evidence Collected:

The remains of the headlight switch and two toggle switches were retained for further inspection and secured at the Rimkus Consulting Group, Inc. Charlotte facility.

Interview:

We attempted the interview the carrier but never got a response to our requests. The statement provided claimed after fueling the LLV and proceeding to his mail route, he saw smoke coming from the dash and vent area. The area described as the origin was the headlight switch. No injuries were reported during the fire event.

Service Records

A review of the service records revealed no recent repairs or service that would have contributed to the cause of the fire. The last preventive maintenance was completed in August, 2019. No record of the headlight switch being replaced on the service records provided.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jimmie McCants

Jimmie McCants, NAFI - CFEI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

January 16, 2020
RCG File No. 53701226

Photograph 1

View of the front of the vehicle.



Photograph 2

A view of the driver's side.



January 16, 2020
RCG File No. 53701226

Photograph 3

A view of the rear cargo area.



Photograph 4

A view of the passenger side cab inside.



January 16, 2020
RCG File No. 53701226

Photograph 5

A view of the engine compartment.



Photograph 6

A view of the battery which was not damaged.



Photograph 7

A view of drivers compartment with steering column in place.



Photograph 8

Location where neutral safety switch used to be.



Photograph 9
Headlight switch remains.



Photograph 10
A view of the flasher unit attacked by fire.



January 16, 2020
RCG File No. 53701226

Curriculum Vitae



Jimmie L. McCants II, CFEI

Fire Consultant
Fire Division

Background

With 22 years of fire investigation experience and 26 years of law enforcement experience, Mr. Cants is uniquely qualified to work the most complex fire losses. He is a certified fire and explosion investigator (CFEI) through the National Association of Fire Investigators as well as a certified arson/explosive investigator through the Robert Presley Institute of Criminal Investigations. He is also a licensed private investigator in the state of California.

Mr. McCants has investigated over 3,000 fires during his career, including numerous high-profile fires and several fatal fires. He served as a lead investigator for a multi-county fire investigation unit in California and also examined bombing incidents throughout northern California. Because of his past professional experience as a detective, he is well-versed in taking statements, collecting and preserving evidence, and identifying the warning signs of arson and possible insurance fraud.

On-scene experiences with structural fires and explosions for various types of occupancies have provided him with a working knowledge of building construction, fire behavior, and post-investigation techniques for analyzing damages and fire cause and origin. His experience extends to residential, commercial, marine, automobile, and heavy equipment investigations.

Contact Information

(925) 677-7439

jmccants@rimkus.com

5099 Commercial Circle,
Suite 100
Concord, CA 94520



Rimkus Consulting Group, Inc.
1881 Worcester Rd.
Suite 203
Framingham, MA 01701
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

March 4, 2016

Re: RCG File No: 44802574
LLV Number: 4304603
VMF Location: 955 Goffs Falls Road in Manchester, New Hampshire
Subject: Final Report

On December 21, 2015, a fire occurred involving LLV 4304603, VIN 1GBCS1049R2910865 owned and operated by the USPS. The vehicle was inspected at the USPS Vehicle Maintenance Facility located at 955 Goffs Falls Road in Manchester, New Hampshire. Rimkus Consulting Group, Inc. was retained to determine the origin and cause of the fire. Our inspection of the vehicle occurred on January 20, 2016.

In the course of our work, we inspected and photographed the vehicle, reviewed the work order history and interviewed the carrier. Our work to complete this assignment was conducted by Scott S Popovich, CFEI, Fire Consultant. This report was technically review by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended by the current edition of National Fire Protection Association's N.F.P.A. 921 – "Guide for Fire and Explosion Investigations".

Conclusions

1. Based on the observed fire damage and witness interviews, it was determined that the fire originated on the interior operator area of the involved LLV.
2. The specific area of fire origin within the operator compartment could not be conclusively determined due to the severity of the sustained fire damage and the lack of remaining conclusive physical evidence.

3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the fire damage and lack of remaining physical evidence.

Observations

Exterior Inspection:

The examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left refers to the passenger side. We observed movement and intensity fire patterns on the front of the vehicle indicating a fire originating in the passenger compartment. The windshield was missing and was in pieces on the interior floor due to thermal conditions. The window glasses in the small triangular windows near the windshield were broken out. The roof above the driver's seat and the "A" post were consumed by fire. Part of the fender below the "A" post was consumed by fire on the driver's side. The glass in the two sliding doors were slightly smoke stained but intact and free of damage indicating they were in the open position during the fire. The rear slide-up cargo door was severely smoke and heat damaged indicating it was in the open position during the fire. The LLV number was verified from markings by the rear cargo door. Movement and intensity fire patterns on the left side of the vehicle indicated a fire originating on the interior of the vehicle and moving outward's. All four tires were intact and inflated.

Interior Inspection:

The interior was inspected. The inspection began at the rear of the vehicle in the cargo compartment. Some light fire debris was observed on the floor of the cargo area. We did not observe any items of evidentiary value in the debris. Movement and intensity fire patterns on both side walls indicated a fire progressing from the front of the vehicle to the rear. The plastic items within the cargo area were almost entirely melted due to thermal conditions. The data plate was observed on the cargo wall of the vehicle. The driver's seat cushioning material was completely consumed by fire. The debris in the interior was systematically delayered and removed to the rear cargo compartment. We did not observe any material with evidentiary value in the debris. The electrical conductors were examined in the interior. We did not observe any evidence of adverse electrical activity or anomalies in the conductors. The key was removed from the vehicle and the ignition was in the "off" position. The most severe fire damage was observed to the dashboard area. Movement and intensity fire patterns indicated that the fire originated in the area of the dashboard on the interior of the vehicle.

Engine Compartment Inspection:

The engine compartment was examined from above. The engine hood was damaged and bent from the fire department extinguishment operations. The middle of the hood had a small movement and intensity fire pattern indicating a fire progressing from the interior of the vehicle and moving to the engine compartment. The battery was intact and free of fire damage. The electrical conductors near the battery and in the engine compartment were examined and we did not observe any adverse electrical activity or anomalies. Flame impingement was observed to the engine components that were near the fire wall. The fire had consumed the aluminum fire wall when the fire progressed from the interior of the vehicle to the engine compartment. Most of the plastic and rubber engine components sustained directional melting but remained intact. Based on the fire patterns within this area, the engine compartment was eliminated as the area of origin. The vehicle was equipped with a GM fuel filter system.

Undercarriage Inspection:

The undercarriage was examined. The frame rail components were undamaged. The associated fuel lines and filter system were intact and free of damage. Minor dripping of metal and plastic was observed towards the front of the vehicle. The undercarriage was eliminated as the origin of the fire. The involved LLV was mounted on an AM General frame.

Fuse Panel Inspection:

The fuse panel was almost entirely consumed by fire and did not contain any useable evidence. There were no signs of adverse electrical activity on the conductors still attached to the fuse panel.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence and an eye witness that the fire originated at the dashboard of the vehicle. The specific area of origin could not be conclusively identified at the time of our inspection due to the severity of the damage and the lack of conclusive physical evidence.

Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of the examination due to severity of the damage and the lack of remaining physical evidence in the area of origin.

Evidence Collected:

No evidence was collected.

Interview:

On January 22, 2016 a telephone interview was conducted with the driver of the vehicle. She reported the following information:

- She had just taken the vehicle out to help another driver.
- She had been on the road for approximately 10-20 minutes when the fire occurred.
- When she pulled over to place mail in a box, she noticed a small flame similar to a candle coming from the dash board vent on the left side.
- She went to blow the flame out and it shot back at her.
- She then turned the vehicle off and took the key out of the ignition.
- She called the post office and 9-1-1.
- She opened the back cargo door and started to pull the mail out.
- Within 5 minutes, the truck was completely in flames.
- The fire department arrived and extinguished the fire.
- She had just taken the vehicle out for that day but did not experience any problems before the fire.
- The vehicle was a loaner and it was the first time she had driven it.
- She is a non-smoker and was not using any other type of open flame near the vehicle.

Service Records:

A review of the service records was completed by the fire investigator during the examination and relayed. There was no current work that would have caused or contributed to the causes noted.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,

RIMKUS CONSULTING GROUP, INC.

Scott S. Popovich

Scott S. Popovich, CFEI, CFPS
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 4, 2016
RCG File No. 44802574

Photograph 1

Front and driver's side of LLV 4304603.



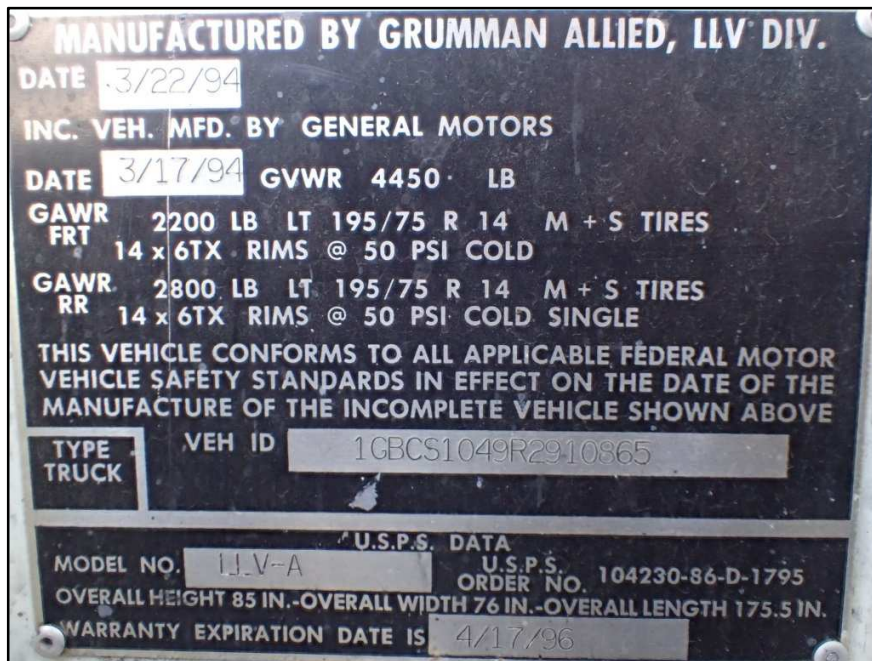
Photograph 2

Rear of LLV.



March 4, 2016
RCG File No. 44802574

Photograph 3
Data plate of LLV 4304603.



Photograph 4
Engine compartment.



March 4, 2016
RCG File No. 44802574

Photograph 5

Dash board and the area of origin.



Photograph 6

Remains of the fuse panel.



March 4, 2016
RCG File No. 44802574

CVs



SCOTT S. POPOVICH, CFPS, CFEI, CVFI, FIT FIRE CONSULTANT

Mr. Popovich's professional career includes 25 years with the Woonsocket Fire Department in the city of Woonsocket, RI. In that capacity he has been involved in many different emergency services including Deputy Director of Emergency Management, Assistant Fire Marshal, Lieutenant and Firefighter. As a licensed state of Rhode Island Assistant Deputy State Fire Marshal his duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Popovich has a Master of Science in Fire and Arson Investigation from the University of New Haven with a heavy concentration in forensics and a Bachelor of Science in Public Administration from Roger Williams University. He maintains certifications as a fire investigator and fire inspector and has attended numerous classes at the National Fire Academy and the Rhode Island State Crime Laboratory.

Mr. Popovich was recently recognized for project development for the planning and execution of Emergency Response Training for CVS Corporate Headquarters in Woonsocket, Rhode Island.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

M.S. – Fire and Arson Investigation – University of New Haven, Connecticut
B.S. – Public Administration – Roger Williams University, Rhode Island
A.S. – Fire Science – Community College of Rhode Island

Licenses and Certifications

Fire Investigative Technician (FIT) by the International Association of Arson Investigators
Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) by the National Association of Fire Investigators
Certified Fire Protection Specialist (CFPS) by the National Fire Protection Association
Certified Fire Inspector (CFI) by the National Fire Protection Association
Certified Evidence Collection Technician (ECT) by the International Association of Arson Investigators
Licensed Emergency Medical Technician by the State of Rhode Island
Licensed Oil Heat Technician
Licensed Hoisting Equipment Operator by the State of Rhode Island
Licensed Private Detective in the State of Rhode Island

Professional Memberships

IAAI (International Association of Arson Investigators)
RIIAAI (Rhode Island Chapter of International Association of Arson Investigators) Board Member



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
1661 International Drive, Suite 400
Memphis, TN 38120
(855) 782-4228 Telephone
(615) 883-4118 Facsimile

October 11, 2017

Re: RCG File No:

LLV Number: 53701128
VMF Location: 4305419
Subject: 181 Lynnfield Road Memphis, Tennessee
Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine the USPS LLV 4305419, VIN 1GBCS1047R2901416. The vehicle was examined at the USPS White Station Auxiliary Vehicle Maintenance Facility located at 1181 Lynnfield Road in Memphis, Tennessee. The fire incident reportedly occurred at 484 Queensbridge Road in Collierville, Tennessee on September 22, 2017.

In the course of our work, we examined and documented the fire damaged vehicle on October 3, 2017. Our work to complete this assignment was performed by Eastern Region Fire Manager John R. Farill, IAAI-CFI (V). This report and case was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the operator's compartment of the vehicle within the dashboard.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the dashboard area and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the dashboard area and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a Rheostat headlight switch failure as the possible cause of the fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side.

Severe fire and heat damage were observed on the front of the vehicle to include a severe a large amount of mass loss. The window frame, windshield and the majority of the roof structure over the mail compartment was consumed during the fire event. The majority of the fire damage was located at the front of the vehicle.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred in and around dashboard area. The majority of the combustible materials in and around the dashboard area had been consumed during the fire to include the majority of the conductors, switches and related components. Burn patterns observed indicated the fire progressed into the engine compartment through the manufactured openings in the bulkhead. Fire patterns converted to heat and smoke patterns that progressed into the cargo compartment.

Engine Compartment Inspection:

The engine compartment was examined. Severe fire and heat damage was observed at the rear of the compartment and decreased in severity as progress was made forward to the front of the vehicle. Burn patterns observed indicated the fire originated within the mail compartment and progressed into the engine compartment through the manufactured openings in the bulkhead. The fuel filter was intact and located inside the frame rail on the left side forward of the rear axle. The fuel system was an AC Delco model. The battery for the vehicle was located at the front right side of the engine compartment and sustained severe fire damage from exterior fire attack. The engine oil

and transmission fluid were examined. The transmission fluid level was within normal operation range. The engine oil level was unable to be checked due to the dipstick having been consumed during the fire event.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire or mechanical damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The fuel tank was undamaged and not leaking. The transmission was intact, undamaged and not leaking fluids. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage. The fire damage observed was a result of the fuse panel being exposed to the fire.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence it was determined that the fire originated in the dashboard area and progressed outward.

Contributing Factors:

Issues with the headlamp switch in the area of other electrical conductors could not be eliminated as a contributing factor to the cause of the fire.

Evidence Collected:

The burned debris from the floorboard area to include various pieces of electrical conductors and the damaged remnants of the engine control module were collected and sent to Rimkus laboratory for further inspection.

Interview:

An interview was conducted with the carrier who reported the following: He was nearing the end of his normal delivery route when he first smelled what he first believed was someone cooking on a BBQ grill. Shortly thereafter, the vehicle "spit and sputtered". He pulled to the end of the street and placed the transmission in "park". As

he was doing that, he heard a loud squeaking noise. He immediately turned the ignition switch "off". Smoke was observed coming from under the hood and, a very short time later, from the air vents in the dash. He evacuated the vehicle, called his supervisor (who called 911) and attempted to remove the mail from the vehicle. No injuries were reported during the fire event.

Service Records:

A review of the service records provided for the involved LLV did not reveal any recent repairs or work that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,

RIMKUS CONSULTING GROUP, INC.

John R. Farill

John R. Farill, IAAI-CFI (V)
Eastern Region Fire Manager

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

October 11, 2017
RCG File No. 53701128

Photograph 1

A view of the front.



Photograph 2

A view showing the driver's side.



October 11, 2017
RCG File No. 53701128

Photograph 3

A view of the mail side.



Photograph 4

A view of the hood area showing the mass loss of the windshield frame and roof structure.



October 11, 2017
RCG File No. 53701128

Photograph 5

A view of the dashboard and mail compartment.



Photograph 6

A view into the mail compartment area.



October 11, 2017
RCG File No. 53701128

Photograph 7

A view of the engine compartment.



Photograph 8

A view of the undercarriage.



October 11, 2017
RCG File No. 53701128

Photograph 9

An additional view of the undercarriage area.



Photograph 10

A view showing the fuel filter found intact and undamaged.



October 11, 2017
RCG File No. 53701128

CVs



**JOHN R. FARILL, IAAI-CFI
FIRE DIVISION MANAGER, EASTERN REGION**

Mr. Farill started his public safety career as a police officer in 1984 before transferring to the Palm Beach County Fire Rescue as a Fire Investigator in 2002. As a Palm Beach County fire investigator, he performed fire origin and cause investigations, interview and interrogation of witnesses and suspects, processing of evidence and criminal investigations.

As the lead investigator, Mr. Farill's forensic experience encompasses investigation of more than 850 fires involving fire and explosion causation in industrial settings, residential and commercial structures, vehicles, marine vessels, aircraft and wildland fires. Areas of expertise include management of fire scene analysis, evidence and data collection, monitoring of destructive and non-destructive testing, investigative interviews, scene photography, accelerant testing, and ICC and NFPA fire code compliance. He has provided legal depositions and court testimony in support of legal and technical findings as an expert witness.

Mr. Farill is an IAAI-Certified Fire Investigator, an NFPA Certified Fire Inspector, Florida State Division of State Fire Marshal Fire Investigator II, Municipal Fire Safety Inspector and a Fire Instructor 1. He has received his Pro Board certification through the National Board on Fire Service Professional Qualifications as a Fire Investigator, NFPA 1033. He instructs Fire Origin and Cause classes for college.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Commission on Criminal Justice Standards and Training – Law Enforcement Recruit Training
11/87

Florida Division of State Fire Marshal – Florida State Firefighter II 1/2002

Florida Division of State Fire Marshal – Municipal Fire Safety Inspector 10/2002

Florida Division of State Fire Marshal – Fire Service Instructor 9/2007

Florida Division of State Fire Marshal – Fire Service Investigator II 9/2007

International Association of Arson Investigators – Certified Fire Investigator 11/2006

Florida Department of Agriculture & Consumer Services – Private Investigator 9/2007

Gold Coast Forensic Association

International Association of Arson Investigators

Florida Fire Marshal's and Inspectors Association

EMPLOYMENT HISTORY

2011 – Present

Rimkus Consulting Group, Inc.

2002 - 2011

Palm Beach County Fire Rescue

2001 - 2002

City of Greenacres Public Safety

1987 – 2001

Florida Fish and Wildlife Conservation Commission

1986 - 1987

City of Gulf Breeze Police Department

1984 – 1986

Escambia County, Florida, Sheriff's Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1661 International Drive, Suite 400
Memphis, Tennessee 38120
(855) 782-4228 Telephone
(615) 883-4118 Facsimile

March 2, 2018

Re: RCG File No: 53701226
LLV Number: 4305437
VMF Location: 685 South B.B. King Boulevard Memphis, Tennessee
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 4305437, VIN 1GBCS1045R2911463. The vehicle was examined at the USPS Memphis Vehicle Maintenance Facility located at 685 South B.B. King Boulevard in Memphis, Tennessee. The fire incident reportedly occurred at 2727 Maggie Woods Place in Arlington, Tennessee on February 9, 2018, while it was being operated on its normal delivery route.

In the course of our work, we examined and documented the fire damaged vehicle on February 23, 2018. In addition, we interviewed the carrier/driver of the vehicle by phone. Our work to complete this assignment was performed by John R. Farill, IAAI-CFI (V), Eastern Region Fire Manager. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator's compartment of the involved LLV.

2. The specific area of fire origin was determined to be at the rheostat headlamp switch positioned in the left side of the dashboard.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the mail side and the left side refers to the driver's side.

Severe fire and heat damage were observed on the front of the vehicle to include structural mass loss. The window frame, windshield, dashboard, bulkhead and the majority of the roof structure over the operator's compartment was consumed during the fire event. The majority of the fire damage was located at the front of the vehicle.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred in and around the dashboard and bulkhead areas. The vast majority of the combustible materials in and around these areas had been consumed during the fire to include the majority of the conductors, switches, and related components. Fire patterns converted to heat and smoke patterns as progress was made into the cargo compartment.

Engine Compartment Inspection:

The engine compartment was examined. Severe fire and heat damage was observed at the rear of the compartment and decreased in severity as progress was made away from the bulkhead. The fuel filter was intact and located inside the frame rail on the left side forward of the rear axle. The fuel system was an AC Delco model. The battery for the vehicle was located at the front right side of the engine compartment and sustained severe fire damage from exterior fire attack. There were indications of internal failure within the engine block and reciprocating assembly. The engine oil and transmission fluid levels were unable to be checked due to the dipsticks having been consumed during the fire event.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire or mechanical damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The fuel tank was undamaged and not leaking. The exhaust system was intact. The transmission was intact, undamaged and not leaking fluids. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

The fuse panel had sustained severe fire damage. All of the fuse panel combustible materials had been consumed during the fire. The electrical conductors and their connectors were observed with no adverse electrical event. The fuse panel was eliminated as the origin of the fire.

Area of Fire Origin:

Based on our observations and witness statements it was determined that the area of fire origin was in the driver's compartment on the left side of the steering column at the headlamp switch.

Potential Contributing Factors:

Issues with the headlamp switch in the area of other electrical conductors could not be eliminated.

Evidence Collected:

No evidence was collected.

Interview:

An interview was conducted with the carrier, who reported the following:

- Her vehicle was operating normally with no issues on the day of the fire.
- She was approximately one-hour into her normal delivery route when she first smelled and observed smoke coming from the underside of the dashboard.

- She immediately stopped the vehicle, turned off the ignition, grabbed her purse and phone, and exited the vehicle. She called her supervisor to report the vehicle problem.
- As she was on the phone, smoke and fire was observed coming from under the hood.
- She immediately called 911 to report the fire.
- Due to the rapid growth of the fire, she was unable to remove the mail from the vehicle.
- She waited at the side of the road for the fire department to arrive. No injuries were reported during the fire event.

Service Records

A review of the service records revealed no recent repairs or service that would have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

John R. Farill

John R. Farill, IAAI-CFI (V)
Eastern Region Fire Manager

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

March 2, 2018
RCG File No. 53701226

Photograph 1

View of the front of the vehicle.



Photograph 2

A view of the driver's side.



March 2, 2018
RCG File No. 53701226

Photograph 3

A view of the rear.



Photograph 4

A view of the passenger side.



March 2, 2018
RCG File No. 53701226

Photograph 5

A view of the engine compartment.



Photograph 6

A view of the battery which was damage from exterior fire attack.



March 2, 2018
RCG File No. 53701226

Photograph 7

A view of the rear of the engine compartment where the bulkhead was consumed during the fire event.



Photograph 8

A view of the floorboard area after debris removal.



March 2, 2018
RCG File No. 53701226

Photograph 9

A view of the front undercarriage area.



Photograph 10

A view of the undamaged fuel filter and fuel lines.



March 2, 2018
RCG File No. 53701226

Photograph 11

A view of the undamaged fuel tank.



Photograph 12

A view of the undamaged transmission.



March 2, 2018
RCG File No. 53701226

CVs



JOHN R. FARILL, IAAI-CFI FIRE DIVISION MANAGER, EASTERN REGION

Mr. Farill started his public safety career as a police officer in 1984 before transferring to the Palm Beach County Fire Rescue as a Fire Investigator in 2002. As a Palm Beach County fire investigator, he performed fire origin and cause investigations, interview and interrogation of witnesses and suspects, processing of evidence and criminal investigations.

As the lead investigator, Mr. Farill's forensic experience encompasses investigation of more than 850 fires involving fire and explosion causation in industrial settings, residential and commercial structures, vehicles, marine vessels, aircraft and wildland fires. Areas of expertise include management of fire scene analysis, evidence and data collection, monitoring of destructive and non-destructive testing, investigative interviews, scene photography, accelerant testing, and ICC and NFPA fire code compliance. He has provided legal depositions and court testimony in support of legal and technical findings as an expert witness.

Mr. Farill is an IAAI-Certified Fire Investigator, an NFPA Certified Fire Inspector, Florida State Division of State Fire Marshal Fire Investigator II, Municipal Fire Safety Inspector and a Fire Instructor 1. He has received his Pro Board certification through the National Board on Fire Service Professional Qualifications as a Fire Investigator, NFPA 1033. He instructs Fire Origin and Cause classes for college.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Commission on Criminal Justice Standards and Training – Law Enforcement Recruit Training
11/87

Florida Division of State Fire Marshal – Florida State Firefighter II 1/2002

Florida Division of State Fire Marshal – Municipal Fire Safety Inspector 10/2002

Florida Division of State Fire Marshal – Fire Service Instructor 9/2007

Florida Division of State Fire Marshal – Fire Service Investigator II 9/2007

International Association of Arson Investigators – Certified Fire Investigator 11/2006

Florida Department of Agriculture & Consumer Services – Private Investigator 9/2007

Gold Coast Forensic Association

International Association of Arson Investigators

Florida Fire Marshal's and Inspectors Association

EMPLOYMENT HISTORY

2011 – Present

Rimkus Consulting Group, Inc.

2002 - 2011

Palm Beach County Fire Rescue

2001 - 2002

City of Greenacres Public Safety

1987 – 2001

Florida Fish and Wildlife Conservation Commission

1986 - 1987

City of Gulf Breeze Police Department

1984 – 1986

Escambia County, Florida, Sheriff's Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
6990 Columbia Gateway Drive, Suite 110
Columbia, MD 21046
(877) 872-2999 Telephone
(410) 872-9111 Facsimile

April 17, 2017

Re: RCG File No:

LLV Number: 47508789
VMF Location: 4305516
Subject: 6801 Oak Hall Lane in Columbia, Maryland
Preliminary/Final Report

Dear

On March 25, 2017, a fire occurred in a US Postal Service vehicle at 114 Prospect Street in Easton, Maryland. On March 30, 2017 Rimkus Consulting Group, Inc. was retained to examine the 1994 Chevrolet LLV 4305516 with a vehicle identification number (VIN) of 1GBCS1044R2911549. On April 3, 2017, we conducted a fire origin and cause examination on the vehicle at US Postal Service Maintenance Facility located at 6801 Oak Hall Lane in Columbia, Maryland.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records, and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Charles W. Feeley, IAAI-CFI. A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the vehicle.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of an engine fluid leak (oil, transmission fluid, etc.) onto a hot engine surface as the possible cause of the fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed in the engine compartment and the mail compartment. Total mass loss was observed to the windshield, engine hood assembly, dash board, and multiple engine components. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer which were Goodyear LT 195/75 R15. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire. Severe fire damage was observed to the left side of the vehicle. The left side mail door was severely fire damaged, with a portion of the aluminum frame having melted. Severe fire damage was also observed to the top of the door and the top portion of the cargo area. The front of the vehicle had sustained severe fire damage. The cover for the engine compartment had been consumed by the fire. The bulkhead between the engine compartment and the mail compartment was also missing. Severe fire damage was observed throughout the engine compartment.

Severe fire damage was also observed to both sides of the vehicle. Severe heat damage was observed to the upper portion of the cargo area. Severe fire damage was observed to the driver's door and the front portion of the door frame was missing. The front fenders were observed with severe fire damage and mass loss. The entire aluminum top of the vehicle had melted as the result of thermal exposure from the fire.

The exhaust system was undamaged by the fire. The rear wheels, brakes, brake lines, and tires were undamaged. The right front tire, wheel, brake, and brake line had sustained no fire damage. The left tire sustained fire damage. The brakes, brake lines, and wheels were undamaged by the fire. The rear axle was not leaking or damaged.

The transmission was undamaged. The fuel lines were intact along the left open frame. The flexible fuel lines at the cross over to the right side above the transmission were intact.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage throughout. All combustible seating material had been consumed, exposing the metal seat frames. The steering column and brake pedal assembly had been severely fire damaged. The rear cargo area sustained smoke damage throughout. The left side panel sustained fire and heat damage along the upper portion. The front bulkhead and roof sustained fire and heat damage at the pass through from the mail compartment. The front bulkhead had been consumed. The fuse block located on the right side of the mail compartment had fallen into the engine compartment and was too severely damaged by the fire to be evaluated. The ignition was too severely damaged to be evaluated. The heater fan and coil had been placed on the floor. The wiring harness was examined and a bead was present on one small gauge conductor in the area of the headlight switch.

The most severe fire damage was observed at the bulkhead, dashboard, windshield, and steering column. The burn patterns observed to the interior area progressed upward and outward from the engine compartment. After a review of the progression of the burn patterns it was determined the fire progressed from the engine compartment into the mail compartment through the manufactured holes in the bulkhead and due to the failure of the windshield.

Engine Compartment Inspection:

Examination of the engine compartment revealed severe fire damage throughout the compartment. The vehicle was equipped with a GM 2.2L, 4-cylinder gasoline engine. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the engine compartment. The engine compartment sustained fire, heat, and smoke damage throughout. The damage was most severe on the left side of the engine compartment.

The power steering unit sustained fire damage. The reservoir had been consumed. The upper portion of the flexible return line and reservoir had been consumed. The aluminum dome cover on the right side of the engine compartment above the fuel rail had melted. The upper radiator hose sustained fire and heat damage to the upper exposed surface. The lower radiator hose positioned on the left side of the engine sustained fire and heat damage to the upper portion. A portion of the serpentine belt had survived the fire. The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been partially consumed. The melted remains of the fuse box from the mail compartment and the attached wiring harness were inspected. The wiring

harness sustained fire and heat damage. The insulation had been consumed. The alternator sustained severe fire and heat damage. The insulation had been consumed from the conductors to the alternator. The main conductor was secure with no evidence of adverse electrical activity. The auxiliary conductor was secure. The top of the battery case had sustained fire and heat damage. The conductors had become detached from the terminals. The negative conductor was attached to the frame and to the block. The main positive conductor was attached to the starter. The insulation had been consumed, but displayed no evidence of adverse electrical activity. The auxiliary conductor to the alternator was intact and displayed no evidence of adverse electrical activity. The fuel rail was intact. The injectors sustained heat damage but were intact. The flexible section of the vapor return line from the fuel tank to the solenoid mounted in the grill had been consumed. The flexible section from the solenoid to the rear of the throttle body was intact.

Undercarriage Inspection:

Examination of the rear undercarriage revealed no evidence of soot, smoke, heat or fire damage. The undercarriage in the area of the engine sustained fire and heat damage at the left side of the engine. The damage was most severe above the starter. The involved LLV was mounted on a GM frame. The fuel lines were positioned within the open frame routed to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. They were routed above the transmission to the right side of the engine. The rubber sections of the fuel lines at the transmission were intact. The top of the transmission sustained no fire or heat damage from the engine compartment

Fuse Panel Inspection:

The fuse panel of the mail compartment which had fallen into the engine compartment and was observed with severe fire damage. Examination of the fuse panel revealed severe fire damage and mass loss to the panel and all of the fuses, due to the severe fire damage and mass loss we were not able to determine if any were fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated within the engine compartment of the vehicle. The specific area of origin could not be conclusively identified due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination. The most severe fire damage was observed to be on the left side of the engine compartment. The more specific area of severe fire damage was determined to be above the starter.

Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination. We could not eliminate the possibility of an engine fluid leak (oil, transmission fluid, etc.) onto a hot engine surface as the possible cause of the fire.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interviews:

On April 3, 2017, we interviewed the carrier. Ms. stated she began her route at approximately 9:00 A.M. on March 25, 2017, which was near the post office. She stated that on the day of the fire incident, she parked her vehicle and begun her walking route. She stated she periodically relocated her vehicle. She stated she experienced no problems with the vehicle and no unusual smells or smoke with the vehicle.

Ms. stated she stopped at a blocked mail box, parked the vehicle, and turned it off. She exited the vehicle for approximately 15-20 seconds to deliver the mail. She stated when she attempted to restart the vehicle, the starter would crank but the engine would not start. After several attempts to start the vehicle, she called her supervisor to report the problem.

She stated that she began gathering the mail to transfer to a replacement vehicle and she noticed a dark circle began to form in the center of the hood near the windshield and she started smelling smoke. She did not see anything dripping onto the ground under or around the vehicle. After approximately 10 minutes, the smoke worsened and the paint on the hood began to peel. She called 911.

Service Records:

A review of the service records provided for the involved LLV did not reveal any recent repairs or work that would have caused or contributed to the cause of the fire. There was, however, several repairs involving the ignition module in July and September of 2016 and a new starter were installed in October 2017.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles W. Feeley

Charles W. Feeley, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

April 17, 2017
RCG File No. 47508789

Photograph 1

A view of the exterior front of the vehicle.



Photograph 2

The rear of the vehicle.



April 17, 2017
RCG File No. 47508789

Photograph 3

A view of the driver's side and dashboard area, observe the mass loss to the area.



Photograph 4

A view of the left side of the engine compartment.



April 17, 2017
RCG File No. 47508789

Photograph 5

A view of the left side of the undercarriage at the starter.



Photograph 6

A view of the left side frame above the starter.



April 17, 2017
RCG File No. 47508789

Photograph 7

Photo taken during fire event (Provided by USPS).



April 17, 2017
RCG File No. 47508789

CVs



**CHARLES FEELEY, I.A.A.I., C.F.E.I., C.F.I., P. I.
FIRE CONSULTANT**

Mr. Feeley had been employed by the Baltimore City Fire Department for 35 years. In this capacity he had been involved in many different emergency positions including Fire Fighter, Lieutenant, Captain, Chief Safety Officer, Battalion Commander and Division Chief.

Mr. Feeley has completed numerous educational seminars and continuing educational courses.

Mr. Feeley investigated over 550 fires in four years as an investigator and in excess of 5,000 fires as an incident commander at fire scenes. He has given expert testimony in civil and criminal court cases. He supervised the Office of the Fire Marshal in Baltimore City. He also supervised special projects such as the Arson Task Force, juvenile fire setters program, an educational intervention program and public education programs.

At Rimkus Consulting Group, Mr. Feeley has conducted over 500 fire origin and cause determinations that include, but are not limited to, assignments involving residential, commercial, industrial, passenger and commercial vehicles, marine, farm implement/equipment, appliance and electrical equipment related fires.

Mr. Feeley has been recognized for his achievements by being the recipient of awards that include Distinguished Unit Citation, Meritorious Conduct Award, Exemplary Performance, and Distinguished Service Award.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

National Fire Academy
National Nuclear Security Administration
United States Department of Justice, New Mexico Tech.
Department of Homeland Security
National Association of Fire Arson Investigators
United States Department of Justice, Anniston AL.
National Association of Fire Investigators.
Certified Fire and Explosion Investigator, N.A.F.I Certification
Certified Fire Investigator, International Association of Arson Investigators
Licensed as a Private Investigator in the State of Delaware

EMPLOYMENT HISTORY

2006 – Present	Rimkus Consulting Group, Inc.
1970 – 2006	Baltimore City Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
7501 South Quincy Street, Suite 160
Willowbrook, Illinois 60527
(866) 746-5871 Telephone
(630) 321-1847 Facsimile

January 18, 2018

Re: RCG File No: 50905301
LLV Number: 4305609
VMF Location: 615 6th Avenue SE, Cedar Rapids, Iowa
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 4305609, VIN 1GBCS1040R2911595. The vehicle was examined at the USPS Cedar Rapids Vehicle Maintenance Facility located at 615 6th Avenue SE in Cedar Rapids, Iowa. The fire incident reportedly occurred at 1105 Forest Glen Court in Cedar Rapids, Iowa on December 13, 2017.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on December 21, 2017. Our work to complete this assignment was performed by Fire Consultant David A. Mager, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator's compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the rheostat headlamp switch positioned in the left side of the dashboard.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. Severe fire damage was observed at the driver's side windshield and the operator compartment. Total mass loss was observed to the windshield and dashboard on the driver's side of the vehicle. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage to the operator's compartment and smoke staining to the cargo area. Minor fire damage was observed in the cargo area. The most severe fire damage and mass loss was observed to the dashboard area, firewall, and steering wheel assembly. An analysis of the observable fire patterns indicated that the fire originated in this area at or around the headlamp switch positioned in the left side of the dashboard.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L gasoline engine. No fire damage was observed within the engine compartment. The fuel filter system was the GM model. The involved LLV was not equipped with a High Energy Ignition (HEI) distributor.

The battery for the vehicle was located at the front right side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be undamaged and intact; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil,

transmission fluid, power steering fluid, and brake fluid were examined and observed to be within their normal operating range.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact.

Fuse Panel Inspection:

Examination of the fuse panel revealed fire damage to the panel and all of the fuses. The plastic housing of the fuse panel was melted, encasing all of the fuses and connections.

Area of Fire Origin:

Based on the observed patterns of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated in the operator's compartment at the left side of the instrument panel at the headlamp switch.

Contributing Factors:

The LLV reportedly was being driven at the time of the fire. The headlamps were in the "on" position per policy. An electrical event within the switch caused it to heat and ignited surrounding combustible materials.

Evidence Collected:

No evidence was collected for laboratory examination.

Interviews:

In an interview with the driver of the LLV, the carrier stated that he had just delivered a parcel and got back in the LLV. He started the engine and turned on the headlights then drove away. He stated that he smelled something strange right away then after driving approximately one block, he saw smoke coming out from under the dash. He pulled the vehicle over to the side of the road and started to unload parcels

and belongings. He stated that he first saw flames on the left side of the dash just below the headlamp switch.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no indications of recent service or repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Mager

David A. Mager, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

January 18, 2018
RCG File No. 50905301

Photograph 1

1994 Chevrolet LLV 4305609, VIN 1GBCS1040R2911595.



Photograph 2

Fire damage to right side of passenger compartment.



January 18, 2018
RCG File No. 50905301

Photograph 3

Fire damage to left side of dash.



Photograph 4

Remains of headlamp switch.



January 18, 2018
RCG File No. 50905301

Photograph 5
Damage to headlamp switch.



Photograph 6
Overall view of engine compartment.



January 18, 2018
RCG File No. 50905301

CVs



DAVID A. MAGER, CFI FIRE CONSULTANT

Mr. Mager is an International Association of Arson Investigators Certified Fire Investigator, Illinois State Fire Marshall Office Certified Fire Investigator, Certified Fire Officer II, Hazardous Materials Technician "B" and a Illinois Department of Public Health Certified Paramedic.

Mr. Mager has an extensive professional background in the areas of firefighting and fire investigations, and has investigated over five hundred fires. His professional experience includes fire and explosion investigations, fire protection and detection system inspections as well as hazardous materials mitigations.

As an International Association of Arson Investigators Certified Instructor and a Certified Instructor II through the Illinois State Fire Marshall Office, Mr. Mager has conducted numerous live fire training exercises for Fire Fighters and Fire Investigators using authentic room furnishings as well as classes on fire behavior and evidence preservation.

Mr. Mager is a Retired Deputy Fire Chief and had been the Training Officer with the Midlothian, IL. Fire Department. He was an Assistant Team Leader for the Southwest Hazardous Materials Response Team and routinely responded to fire and hazardous materials incidents, fire investigations and conducted life safety inspections within the municipality.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator - Illinois State Fire Marshall Office
Certified Fire Investigator - International Association of Arson Investigators
Certified Instructor – International Association of Arson Investigators
Certified Fire Officer II – Illinois State Fire Marshall Office
Certified Hazardous Materials Technician "B" - Illinois State Fire Marshall Office
Certified Fire Department Incident Safety Officer – Illinois State Fire Marshall Office
International Association of Arson Investigators – Member
International Association of Arson Investigators (Illinois Chapter) – Member

EMPLOYMENT HISTORY

2008 – Present	Rimkus Consulting Group, Inc.
1987 – 2015	Midlothian Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1881 Worcester Rd.
Suite 203
Framingham, MA 01701
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

August 8, 2016

Re: RCG File No: 44802745
LLV Number: 4305914
Inspection Location: 339 Market Street in Warren, Rhode Island
Subject: Final Report

Dear Ms. Myers:

On April 30, 2016, a fire occurred involving LLV 4305914, VIN 1GBCS1049R2911918 owned and operated by the USPS at 216 Tremont Street in Fall River, Massachusetts. The vehicle was located and inspected at United Collision Center at 339 Market Street in Warren, Rhode Island. Rimkus Consulting Group, Inc. was retained to determine the origin and cause of the fire. Our inspection of the vehicle occurred on May 6, 2016.

In the course of our work, we inspected and photographed the vehicle, reviewed the work order history, and interviewed the carrier. Our work to complete this assignment was conducted by Fire Consultant Scott S Popovich, CFEI. This report and case was technically review by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended by the current edition of National Fire Protection Association's N.F.P.A. 921 – "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in and around the dashboard in the operator compartment of the involved LLV.
2. The specific area of fire origin within the dashboard could not be conclusively determined due to the severity of the fire damage and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of the examination due to the severity of the damage in the area of origin and the lack of remaining conclusive observable evidence.

Observations

Exterior Inspection:

The examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left refers to the passenger side. The vehicle was unwrapped by cutting the layer of self-adhering collision plastic that was used to protect the integrity of the fire scene. We observed movement and intensity fire patterns on the front hood of the vehicle, towards the windshield, indicating a fire originating in the passenger compartment. The windshield was missing due to thermal conditions. The window glass in all the other windows was melted due to thermal conditions. The roof above the dash board was consumed by the fire. The rear slide up cargo door was not in place and only a few pieces were located in the debris. The LLV number was verified from markings by the rear cargo door. Movement and intensity fire patterns on the sides of the vehicle indicated a fire originating on the interior of the vehicle and moving outward's. All four tires were intact and inflated.

Interior Inspection:

The interior was inspected. The inspection began at the rear of the vehicle in the cargo compartment. Severe fire damage was observed to the rear cargo area and fire debris was observed on the floor. The fire debris on the floor was systematically delayered and we did not observe any items of evidentiary value in the debris. Movement and intensity fire patterns on both side walls indicated a fire progressing from the front of the vehicle to the rear. The plastic items within the cargo area were entirely melted due to thermal conditions. The aluminum shelving and wall material was partially consumed by the fire. The data plate was not observed on the cargo wall of the vehicle. The driver's seat cushioning material was completely consumed by fire. The debris in the interior passenger area was systematically delayered and removed to the rear cargo compartment. We did not observe any material with evidentiary value in the debris. The electrical conductors were examined in the interior. We did not observe any physical evidence of adverse electrical activity or anomalies in the conductors. The key was removed from the vehicle and the ignition was in the "off" position. The most severe damage was observed to the dashboard area. Movement and intensity fire patterns indicated that the fire originated in the area of the dash board on the interior of the vehicle.

Engine Compartment Inspection:

The engine compartment was examined from above. The engine hood was damaged from the fire and partially consumed. We observed movement and intensity fire pattern on the hood indicating a fire progressing from the interior of the vehicle and moving to the engine compartment. The battery was intact and displayed directional melting indicating a fire progressing from the dash board. The electrical conductors near the battery and in the engine compartment were examined and we did not observe any physical evidence of adverse electrical activity or anomalies. Flame impingement was observed to the engine components that were near the fire wall. The fire had consumed the aluminum fire wall when the fire progressed from the interior of the vehicle to the engine compartment. Some of the plastic and rubber engine components sustained directional melting but remained intact. Based on the fire patterns within this area, the engine compartment was eliminated as the area of origin. The involved LLV was equipped with a GM fuel filter system. Based on the severity of the damage, it could not be conclusively determined if the LLV was equipped with a High Energy Ignition (HEI) Distributor.

Undercarriage Inspection:

The undercarriage was examined. The frame rail components were undamaged. The associated fuel lines and filter system were intact and free of damage. The undercarriage was eliminated as the origin of the fire. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel was consumed by fire and did not contain any useable evidence. There were no signs of adverse electrical activity on the conductors that were once attached to the fuse panel.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage, a systematic evaluation of the remaining physical evidence, and an eye witness, that the fire originated at the dashboard of the vehicle. The specific area of origin could not be conclusively identified at the time of our inspection.

Potential Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of the examination due to severity of the damage and the lack of remaining physical evidence in the area of origin.

Evidence Collected:

No evidence was collected.

Interview:

On May 25, 2016, a telephone interview was conducted with the driver of the LLV. He reported the following information:

- It was his first day assigned to the LLV.
- The LLV was assigned to a route.
- He was returning from a 20 minute walking loop when he opened the rear cargo door.
- Smoke was coming from the vent and was black in color.
- A neighbor used a fire extinguisher but did not put the fire out.
- The police arrived first then the fire department.
- There were no reported issues with the LLV.
- He is a non-smoker.

Service Records:

A review of the provided service records did not indicate any recent work that was performed that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Scott S. Popovich

Scott S. Popovich, CFEI, CFPS
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Eastern Region Fire Manager

Attachments: Photographs, CVs

August 8, 2016
RCG File No. 44802745

Photograph 1
Driver side of LLV.



Photograph 2
Rear of LLV.



August 8, 2016
RCG File No. 44802745

Photograph 3

Engine compartment and dash area of LLV.



Photograph 4

Undercarriage of LLV.



August 8, 2016
RCG File No. 44802745

CVs



SCOTT S. POPOVICH, CFPS, CFEI, CVFI, FIT FIRE CONSULTANT

Mr. Popovich's professional career includes 25 years with the Woonsocket Fire Department in the city of Woonsocket, RI. In that capacity he has been involved in many different emergency services including Deputy Director of Emergency Management, Assistant Fire Marshal, Lieutenant and Firefighter. As a licensed state of Rhode Island Assistant Deputy State Fire Marshal his duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Popovich has a Master of Science in Fire and Arson Investigation from the University of New Haven with a heavy concentration in forensics and a Bachelor of Science in Public Administration from Roger Williams University. He maintains certifications as a fire investigator and fire inspector and has attended numerous classes at the National Fire Academy and the Rhode Island State Crime Laboratory.

Mr. Popovich was recently recognized for project development for the planning and execution of Emergency Response Training for CVS Corporate Headquarters in Woonsocket, Rhode Island.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

M.S. – Fire and Arson Investigation – University of New Haven, Connecticut
B.S. – Public Administration – Roger Williams University, Rhode Island
A.S. – Fire Science – Community College of Rhode Island

Licenses and Certifications

Fire Investigative Technician (FIT) by the International Association of Arson Investigators
Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) by the National Association of Fire Investigators
Certified Fire Protection Specialist (CFPS) by the National Fire Protection Association
Certified Fire Inspector (CFI) by the National Fire Protection Association
Certified Evidence Collection Technician (ECT) by the International Association of Arson Investigators
Licensed Emergency Medical Technician by the State of Rhode Island
Licensed Oil Heat Technician
Licensed Hoisting Equipment Operator by the State of Rhode Island
Licensed Private Detective in the State of Rhode Island

Professional Memberships

IAAI (International Association of Arson Investigators)
RIIAAI (Rhode Island Chapter of International Association of Arson Investigators) Board Member



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
560 SW 12th Avenue
Deerfield Beach, FL 33442
(800) 861-7644 Telephone
(954) 428-1849 Facsimile
Certificate of Authorization No. 8301

August 23, 2016

Re: RCG File No: 41420017
LLV Number: 4307566
VMF Location: 480 Post Office Road in Fort Pierce, Florida
Subject: Final Report

Rimkus Consulting Group, Inc. was requested to examine the vehicle fire loss involving USPS LLV 4307566 that occurred at 3533 Northwest 163rd Court in Okeechobee, Florida on June 13, 2016. In the course of the work, we examined and documented the fire-damaged vehicle on June 21, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 4850 Post Office Road in Fort Pierce, Florida. The work to complete this assignment was performed by Fire Consultant Alexander F. Kapczynski, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin within the engine compartment was determined to be on the left side (mail side) of the engine compartment in the area of the rubber fuel lines and exhaust manifold.

3. The specific ignition sequence and cause of the fire was determined to be a direct result of a failure of the rubber fuel lines routed in close proximity of the exhaust manifold which caused the fuel lines to heat and fail and allowed atomized gasoline vapors to be ignited on the hot surface.

Observations

Exterior Inspection:

The exterior examination of the fire-damaged vehicle commenced from the rear of the LLV and continued in a clockwise rotation. The fire-damaged vehicle was positioned inside a mechanics bay of the VMF. The exterior inspection revealed that the vehicle sustained severe fire damage throughout the LLV. Fire patterns indicated that the fire originated within the engine compartment and spread towards the rear of the vehicle. The left side of the vehicle sustained greater damage as compared to the right side or driver's side. The chassis and frame of the vehicle sustained severe damage on the front left side and a large metal section of the chassis had been consumed by the fire.

Interior Inspection:

The interior inspection revealed severe fire damage in the driver's compartment and moderate damage in the cargo compartment.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated on the left side of the engine compartment. The engine compartment sustained severe damage and the greatest fire damage appeared to have lasted an extended period of time before being extinguished.

Fire patterns indicated that the fire originated on or near the left side of the engine block, where fuel lines were in close proximity to the exhaust system.

Undercarriage Inspection:

The involved LLV had a General Motors (GM) frame. The fuel filter was examined during the undercarriage examination and was positioned on the left side of the vehicle. The fuel lines ran along the left side of the vehicle and entered the engine compartment from the rear of the engine.

Fuse Panel Inspection:

The fuse panel normally positioned in the driver's compartment below the steering column was consumed by the fire and could not be examined.

Area of Fire Origin:

Fire patterns indicated that the fire originated within the engine compartment and spread towards the rear of the vehicle. The path of fire travel appeared to have originated on the left side of the engine compartment and traveled towards the right side of the cargo compartment.

Potential Contributing Factors:

A preventive maintenance inspection was conducted and completed on April 19, 2016, approximately 2 months before the fire incident. A preventive maintenance (PM) inspection was scheduled for June 28, 2016. Fuel lines should be inspected during the PM and replaced if any damage or degradation is observed.

Evidence Collected:

After consultation with Technical Fire Manager, Mr. Jack Kennedy, no evidence was collected.

Carrier Statement:

Multiple attempts to contact and interview the mail carrier had been unsuccessful. According to the written statement, the fire occurred at approximately 3:35 P.M. on June 13, 2016, while she was making deliveries. The LLV's engine started to misfire and then stalled. While attempting to restart the vehicle she observed smoke and an odor similar to burning plastic. Flames appeared and the fire grew rapidly. According to the VMF manager, LLV 4307566 was one of his most reliable vehicles and there were no known issues with the vehicle.

Service Records:

A review of the service records for the involved LLV was conducted and there were no repairs listed that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Alexander F. Kapczynski

Alexander F. Kapczynski, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Eastern Region Fire Manager

Attachments: Photographs, CVs

August 23, 2016
RCG File No. 41420017

Photograph 1

Front view of fire-damaged LLV 4307566.



Photograph 2

View of the driver's side and rear of the postal vehicle.



Photograph 3

The greatest fire damage was observed on the left side of the engine compartment.



Photograph 4

View of the position of the fuel lines from the undercarriage.



August 23, 2016
RCG File No. 41420017

CVs



**ALEXANDER F. KAPCZYNSKI, IAAI-CFI
FIRE CONSULTANT**

Mr. Kapczynski is a Certified Fire Investigator with the International Association of Arson Investigators (IAAI-CFI), the National Board of Fire Service Professional Qualifications and a New York State Certified Level II Fire Investigator with the New York State Office of Fire Prevention and Control. Mr. Kapczynski is a licensed private investigator in the State of Florida. He served in the City of Albany Fire Department for over twenty one years and was a Lieutenant in the City of Albany's Fire Investigation Unit (FIU) for approximately four years. As a member of the FIU, Mr. Kapczynski investigated and determined the origin and cause involving commercial structures, residential structures and vehicles. Mr. Kapczynski has testified on multiple occasions in criminal proceedings pursuant to his duties as a fire investigator.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

City of Albany Fire Department, Albany, New York
Firefighter Essentials, 1992

Hudson Valley Community College, Troy, New York
Emergency Medical Technician Paramedic Level, 1996

Corning Community College, Corning, New York
Associates Degree, Fire Protection Technology, 1997

New York State Fire Academy, Montour Falls, New York
Hazardous Materials Specialist Training, 1998

New York State Fire Academy, Montour Falls, New York
Fire Behavior & Principles of Fire Investigation, 2007

New York State Fire Academy, Montour Falls, New York
Fire Arson Investigation, 2007

International Association of Arson Investigators, Rutland, Vermont
Advanced Fire Investigation Techniques Seminar, 2008

New York State Fire Academy, Montour Falls, New York
Electrical Cause Determination I & II, 2009

International Association of Arson Investigators, Charlotte, North Carolina
Expert Report Writing, 2010

New York State Fire Investigators & ATF, Colonie, New York
Arc Mapping Seminar, 2010



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
8 Greenway Plaza, Suite 500
Houston, Texas 77046
Telephone: (713) 621-3550
Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2020

November 5, 2019

Re: RCG File No: 100016582
LLV Number: 4308367
VMF Location: 1530 Greensmark Drive Bldg. A, Houston, Texas
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine a 1994 LLV 4308367 with VIN: 1GBCS1048R2914356. Work to complete the assignment was performed by Joseph M. Ellington, IAAI-CFI. This report was reviewed by David R. Meyers, IAAI-CFI, Technical Fire Manager.

In the course of the work, we examined and documented the fire-damaged vehicle on Oct. 22, 2019, reviewed maintenance and repair records, and interviewed Lucille Perkins and Jeffery Baldrige, USPS employees at 1530 Greensmark Drive in Building A located in Houston, Texas where our inspection of the vehicle was performed.

Reportedly, the fire occurred during unsuccessful attempts to start the vehicle. James Long, the driver and operator of the vehicle at the time of the fire's occurrence, was unavailable for interview.

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. Fire damage and fire movement and intensity patterns indicated the fire originated in the immediate area of the ignition coil and module before spreading to the remainder of the vehicle.
2. Potential contributing or causative factors may have involved improper replacement and installation of the ignition coil and module. USPS records revealed the ignition coil and module were replaced by Woodland Shell (Invoice No. 67402) on Sept. 12, 2019. The date of the fire's occurrence was reported as Sept. 18, 2019. It is also possible the ignition coil and module may have been defective when they were installed.

Observations

Exterior Inspection:

Our exterior examination revealed a single area of heavy heat stress involving the center portion of the engine cover near the bulkhead separating the engine compartment from the driver/passenger compartment. Thermal fracture of the front windshield directly above this area was observed with corresponding soot deposits. No direct fire damage was observed with respect to the remainder of the vehicle's exterior surfaces. The wheels and tires were intact and no obvious signs of a collision were observed.

Interior Inspection:

Our interior examination revealed a single area of fire damage involving the dash area inside the interior compartment corresponding with our exterior inspection, indicating breach and penetration of the fire from the engine compartment via the bulkhead separating the compartments. Plastics and other synthetic materials comprising components in this area had melted exposing wiring harnesses, conductors, and other components.

Engine Compartment Inspection:

Examination of the engine compartment revealed fire damage concentrated to the rear of the engine nearest the bulkhead with corresponding fire damage to the underside of the engine cover. The most severe fire damage was traced to the driver's side of the engine that descended to the area of the ignition module and standard ignition coil installed on the lower side of the engine. The vehicle was equipped with a 2.2L four-cylinder engine.

Undercarriage Inspection:

Examination of the undercarriage revealed an area of heavy heat stress and fire-damage concentrated to the immediate area of the ignition coil and module at the front of the vehicle, below, and on the right driver's side of the engine. The exhaust system and fuel tank were intact and undamaged. No damage was observed to the undercarriage.

Fuse Panel Inspection:

Inspection of the fuse panel revealed the following fuses were blown.: 120 A – Tail LPS, 10 A – ECM1, 15 A – Hazard, 10 A – ECM B, 15 A – Turn B/U, 5 A – Instru Lamp. Remaining fuses were intact and unblown. No evidence of failure was observed with respect to the fuse panel itself.

Area of Fire Origin:

Fire damage and fire movement and intensity patterns indicated the fire originated in the immediate area of the ignition coil and module before spreading to the remainder of the vehicle.

Potential Contributing Factors:

Potential contributing or causative factors may have involved improper replacement and installation of the ignition coil and module. USPS records revealed the ignition coil and module were replaced by Woodland Shell (Invoice No. 67402) on Sept. 12, 2019. The date of the fire's occurrence was reported as Sept. 18, 2019. It is also possible the ignition coil and module may have been defective when they were installed.

Evidence Collected:

None of the components suspected of failure were removed or collected from the vehicle on completion of the inspection but, left in place pending a possible joint inspection by potentially affected parties.

Interviews:

An interview was unable to be conducted due to the carrier not returning requests. It was stated that the vehicle was being operated and stalled and would not restart after several attempts. Fire was discovered in the engine compartment.

Service Records:

USPS records revealed the ignition coil and module were replaced by Woodland Shell (Invoice No. 67402) on Sept. 12, 2019. The date of the fire's occurrence was reported as Sept. 18, 2019.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Joseph M. Ellington

Joseph M. Ellington, IAAI-CFI
Regional Fire Division Manager

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

November 5, 2019
Rimkus File No. 100016582

Photograph 1

Side profile view of vehicle; fire intensity and heat stress pattern visible on closed engine hood indicating origin of fire inside the engine compartment.



Photograph 2

Interior view of vehicle showing penetration of fire through bulkhead with corresponding thermal fracture of the front windshield directly above the dash console area.



Photograph 3

Engine compartment; area of fire origin involving failure of ignition module is indicated with arrow.



Photograph 4

View of failed ignition module and coil from beneath undercarriage.



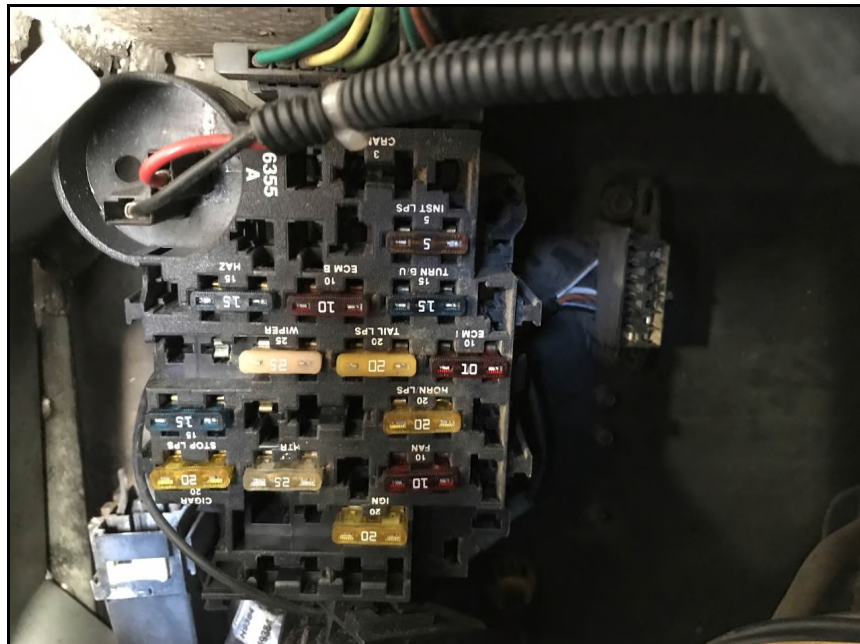
Photograph 5

Exemplar ignition module and coil. The module was identified as manufactured by ACDelco, P/N 19178833, C/N 01406682656.



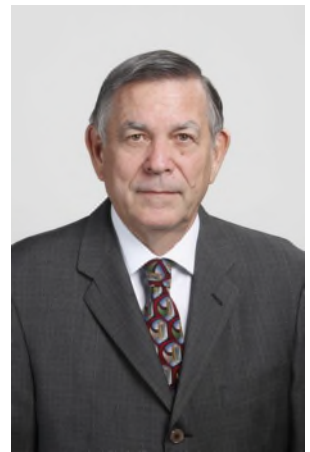
Photograph 6

Visual examination of the vehicle's fuse block.



November 5, 2019
Rimkus File No. 100016582

Curriculum Vitae



Joseph M. Ellington, CFI, CFII, CVFI

Regional Fire Division Manager
Fire Division

Background

Mr. Ellington holds a B.S. degree in Law Enforcement and is a Certified Fire Investigator with the International Association of Arson Investigators and a Certified Vehicle Fire Investigator, Certified Fire Investigation Instructor and Certified Fire and Explosion Investigator with the National Association of Fire Investigators.

He has over 35 years of broad experience in the field of advanced technical investigations including a combination of field and management assignments in both small- and large-scale fire and explosion property losses, fire death and injury cases, product defects and liability cases, arson for fraud investigations, vehicle accident investigation and reconstruction, computer forensics, premises safety and security, and training & development solutions.

Specific areas of expertise include primary responsibility for the direct management and supervision of cases where the origin, cause and responsibility of fires and explosions are at issue. These assignments involve residential, commercial, industrial, marine, offshore production platforms, wind turbines, chemical and manufacturing plants and warehouses, heavy equipment, vehicles, product liability and injury/death related fires and explosions.

Consulting expertise includes evaluation of litigation related matters involving the case areas described above as well as explosions involving LPG, natural gas, and high explosives, fire code and standards compliance, product and label warning evaluations, fire detection and response systems, fire dynamics analysis, computer fire modeling and simulation, investigation of fraud related fire incidents, computer forensics involving fire damaged systems.

Since beginning his career, Mr. Ellington has personally investigated and documented the origin of over 3,000 fires & explosions, performed hundreds of internal technical reviews of investigations performed by others, and has testified in dozens of matters with respect to issues relating to the origin, cause and responsibilities of fires and explosion in both state and federal courts.

Contact Information

(713) 621-3550

jmellington@rimkus.com

Eight Greenway Plaza,
Suite 500
Houston, TX 77046



Rimkus Consulting Group, Inc.
10 Kimler Drive, Suite G
Maryland Heights, MO 63043
(888) 286-0127 Telephone
(314) 432-9501 Facsimile

July 10, 2017

Re: RCG File No:

53502860
LLV Number: 4308615
LLV Location: Cape Girardeau Post Office, 475 Kell Farm Road
Cape Girardeau, Missouri
Subject: Preliminary/Final Report

Dear

On March 29, 2017, a fire occurred involving a US Postal Service vehicle located adjacent to the Post Office at 120 East North Street in Sikeston, Missouri. On June 5, 2017 Rimkus Consulting Group, Inc. was retained to examine the 1994 Chevrolet LLV 4308615 with a vehicle identification number (VIN) of 1GBCS1043R2914636. On June 14, 2017, we conducted a fire origin and cause examination on the vehicle at Cape Girardeau Post Office located at 475 Kell Farm Road in Cape Girardeau, Missouri.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records, collected physical evidence, and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Philip M. Noah, IAAI-CFI. A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated within the engine compartment of the involved LLV.

2. The specific area of origin was at and around a battery cable routed directly below the power steering pump assembly that sustained an adverse electrical event.
3. The specific ignition sequence and cause of the fire was determined to be an adverse electrical event at the large diameter battery cable that was identified routed through a retaining clamp below the power steering pump. The cable exhibited physical evidence consistent with adverse electrical activity and the cable was severed at the retaining clamp. The retaining clamp exhibited physical evidence consistent with adverse electrical activity and arcing. The source of the fire's ignition was resistance heating of the battery cable caused by a direct short between the cable and the retaining ring.
4. Wear and degradation of components allowed an unfused adverse electrical event to develop at the battery hot lead where it was in direct contact with the retaining clamp below the power steering pump within the engine compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer which were Goodyear LT 195/75 R15. There was no evidence to indicate that the brakes, wheel assemblies, or axles had failed. The fuel cap was in place and secured.

The vehicle sustained no visible exterior fire damage.

Interior Inspection:

An examination of the interior of the vehicle was unremarkable with respect to fire and/or heat damage. No fire damage was observed to the dashboard or fuse panel. The cargo area was observed with no fire or smoke damage. All windows and the windshield were observed intact and undamaged.

The vehicle sustained no visible interior fire damage.

Engine Compartment Inspection:

Examination of the engine compartment revealed moderate fire damage to the left front area of the compartment. The vehicle was equipped with a GM 2.2L, four-cylinder

gasoline engine. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the engine compartment. The underside of the hood exhibited smoke and heat patterns. Fire damage was limited to the left side of the engine around the power steering pump.

Fire damage and mass loss of materials was observed to the power steering fluid reservoir, and most of the polymer reservoir had been consumed. Fire progression patterns were consistent with a fire originating below the power steering pump and progressed upward and outward from this location. A large diameter battery cable was identified routed through a retaining clamp below the power steering pump. The cable exhibited physical evidence consistent with adverse electrical activity and the cable was severed at the retaining clamp. The retaining clamp exhibited physical evidence consistent with adverse electrical activity and arcing. The two ends of the severed cable were examined and both exhibited physical evidence of adverse electrical activity. The fuel line was intact from the fuel filter positioned at the bulkhead.

Burn patterns observed in the engine compartment confirmed the fire originated in the front left area of the engine compartment and progressed upward and outward throughout the engine compartment.

Undercarriage Inspection:

The involved LLV was mounted on a GM frame. The fuel lines were examined and it appeared the lines had not failed during the fire progression. The fuel tank was examined, and the vehicle fuel filter system was equipped with a GM filter. Both were free of fire damage. The exhaust system was intact and the transmission did not reveal any leaks. The vehicle sustained no visible undercarriage fire damage.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained no fire damage. All fuses were intact and no blown fuses were observed.

Area of Fire Origin:

Based on the observed patterns of fire damage and a systematic evaluation of the remaining physical evidence, the fire originated at the retaining ring below the power steering pump. The first fuel ignited was combustible insulation materials on the battery cable. The source of the fire's ignition was resistance heating of the battery cable caused by a direct short between the cable and the retaining ring.

Contributing Factors:

Wear and degradation of components allowed an unfused adverse electrical event to develop at the battery hot lead where it was in direct contact with the retaining clamp below the power steering pump within the engine compartment.

Interviews:

It was reported by the carrier that he was delivering mail to the Sikeston Post Office and parked the vehicle at the post office when he observed "smoke" within the engine compartment. He reported that he notified the Postmaster and he utilized a fire extinguisher to extinguish the fire. He reported that he had no issues with the vehicle prior to the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. On March 15, 2017, a service was conducted that included correcting an adverse electrical event with the engine compartment and it was documented that the engine was in need of replacing. On November 1, 2016, the water pump and drive belt were replaced, a power steering hose was replaced, and it was documented that the power steering lines, transmission lines, and front seals and bearings were leaking.

After a review of the service records, it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Evidence Collected:

The damaged battery cables were documented and removed from the vehicle. These items were catalogued and shipped to the Rimkus office in Charlotte for retention.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,

RIMKUS CONSULTING GROUP, INC.

Philip M. Noah

Philip M. Noah, IAAI-CFI, CVFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CV

July 10, 2017
RCG File No. 53502860

Photograph 1
LLV: 4308615.



Photograph 2
Rear area of the vehicle.



July 10, 2017
RCG File No. 53502860

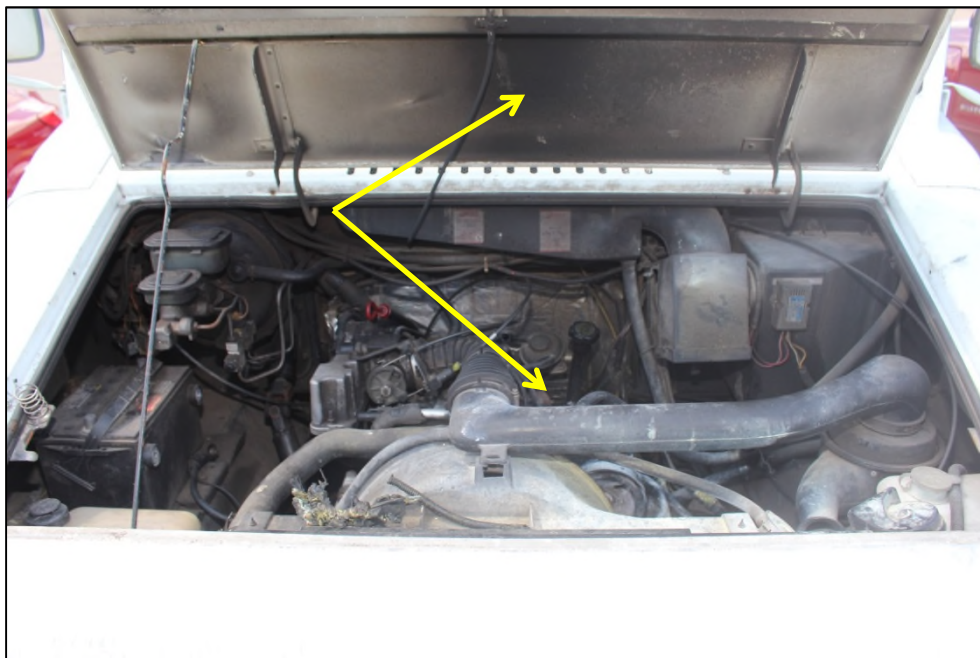
Photograph 3

Driver's side of the vehicle, observe the smoke damage to the hood area.



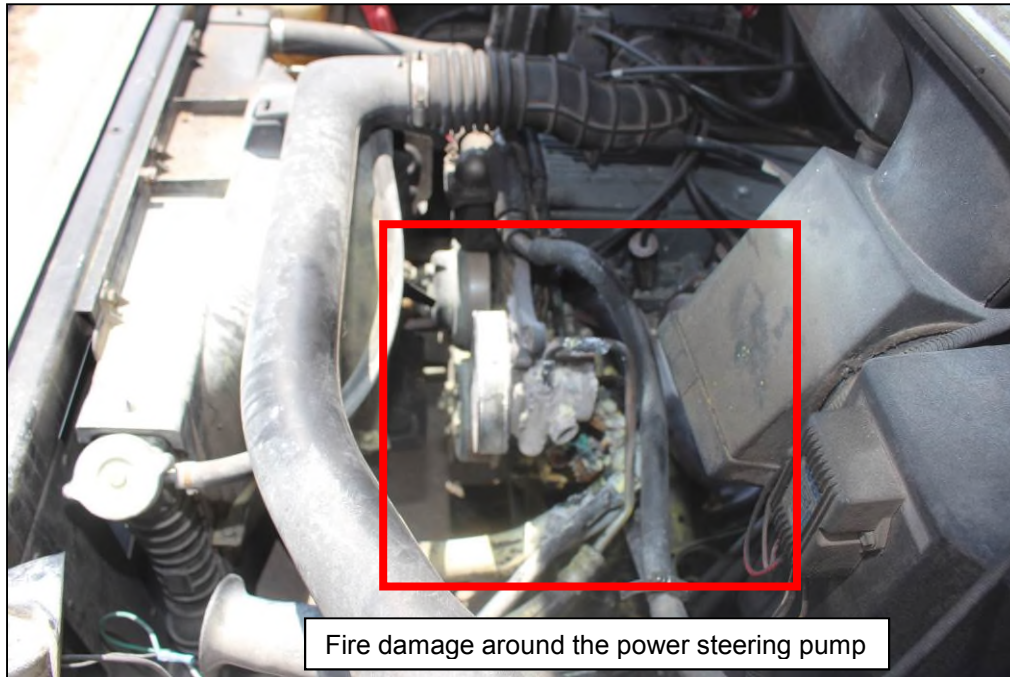
Photograph 4

The engine compartment; observe the damage to the hood and the left side.



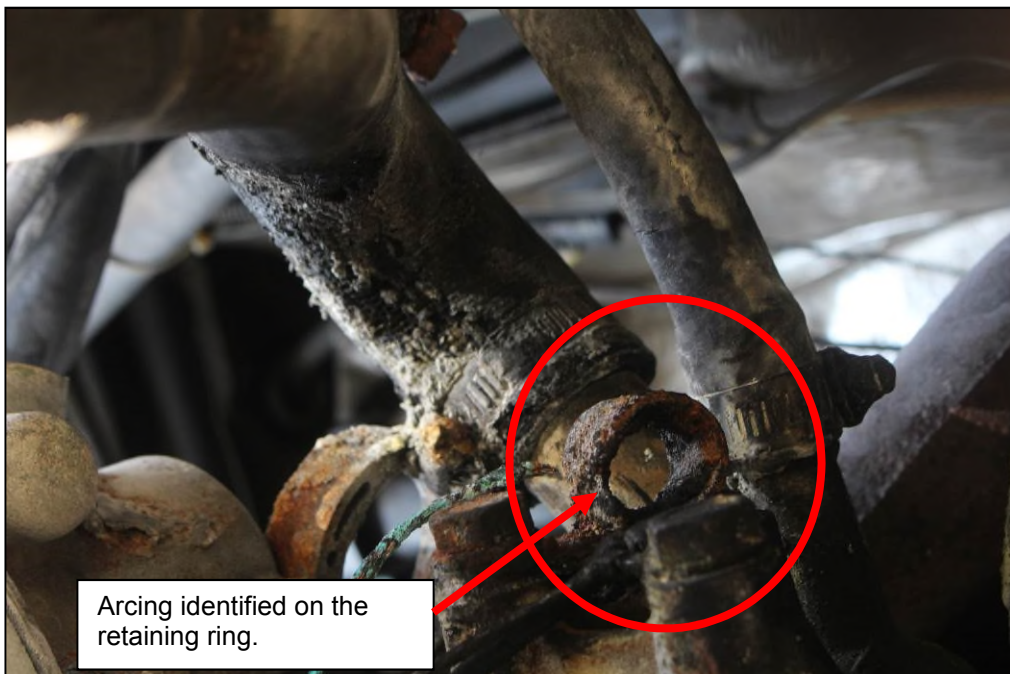
Photograph 5

View of the engine compartment from the left side.



Photograph 6

View of the bottom of the power steering pump from below.



Photograph 7

End of battery cable from the battery.



Photograph 8

View of the electric cable downstream from the retaining ring.



July 10, 2017
RCG File No. 53502860

CVs



Philip M Noah, IAAI-CFI Fire Consultant

Mr. Noah is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson investigators and a Certified Fire Investigator (CFI) in the State of Missouri. Mr. Noah is a licensed Private Investigator in the State of Arkansas; Mr. Noah is a licensed Private investigator and licensed Private Fire Investigator in the State of Missouri. Mr. Noah has over 27 years of experience in fire suppression operations, fire/explosion investigations, technical rescue, hazardous material incidents, fire code enforcement, and building construction plans review. He has lead or assisted in the origin and cause of more than 300 fire and explosion investigations. As a fire investigator he conducted origin and cause investigations on fatal structure fires, residential fires, commercial fires and vehicle fires.

Mr. Noah held the position of Fire Marshal with the Springfield Mo Fire Dept. from 2009 to 2015. As a Fire Marshal Mr. Noah served as a public safety bomb technician on the Springfield Mo. Bomb squad, and was a founding member of the Greene County, Missouri Arson task force, during this time he worked closely with the FBI and ATF. While in this position he also performed hundreds of building plans reviews looking for International Fire Code compliance. Mr. Noah has testified and been qualified as an expert in court proceedings pertaining to fire origin and causation.

Mr. Noah has instructed courses in fire scene evidence preservation, explosives awareness and fire investigation awareness for the insurance industry.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Missouri State University - General education and Chemistry
Drury University - Law Enforcement Academy
Certified Fire Investigator: IAAI (Tested)
Licensed Private Fire Investigator: State of Missouri
Licensed Private Investigator: State of Missouri
Certified Fire Investigator: State of Missouri (Tested)
Class "A" Peace officer license: State of Missouri (Tested)
Certified Firefighter 1&2: State of Missouri (Tested)
Certified Fire Officer 1&2: State of Missouri (Tested)
Certified Fire Inspector: State of Missouri (Tested)
Certified Fire Inspector 1&2: International Code Council (Tested)
Certified Bomb Technician: Federal Bureau of Investigation (Tested)
Certified Fire Service Instructor: State of Missouri (Tested)
Certified Major Crimes Investigator: Springfield Mo Police Department (Tested)
International Association of Arson Investigators, 2010- Present
Missouri Professional Fire and Fraud Investigators (past)
International Association of Fire Fighters (past)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
92 South Street
Hopkinton, MA 01748
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

September 1, 2017

Re: RCG File No:

	44803291
LLV Number:	4308636
VMF Location:	955 Goffs Falls Road in Manchester, New Hampshire
Subject:	Preliminary/Final Report

Dear

On July 10, 2017, a fire occurred in a US Postal Service vehicle at 60 Forrest Street in Londonderry, New Hampshire. On July 07, 2017, Rimkus Consulting Group, Inc. was retained to examine the Grumman LLV 4308636. On July 12, 2017, we conducted a fire origin and cause examination on the vehicle at the Manchester VMF located at 955 Goffs Falls Road in Manchester, New Hampshire.

In the course of our work, we interviewed the mail carrier, examined the vehicle, and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Scott S. Popovich, IAAI-CFI (V). This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the vehicle.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of wear and degradation of electrical components allowing an adverse electrical event to develop on the battery hot lead to the starter where it was in direct contact with the components within the engine compartment as the possible cause of the fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. We observed severe fire damage to the engine and mail compartments of the LLV. The fenders, engine hood, bulkhead, windshield, support post and roof over the mail compartment had been consumed by fire. Fire patterns indicated a fire originating in the engine compartment and progressing towards the cargo compartment. The cargo door was severely fire damaged. The break and running light housings in the rear of the vehicle were fire damaged. The two front tires were deflated and fire damaged. The two rear tires were intact and inflated.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred in and around the dashboard area. The majority of materials in and around the dashboard area had been consumed during the fire. The fire damage progressed from the engine compartment through the interior and then into the cargo area of the LLV. There was still mail observed in the rear cargo compartment and the staff was notified. The mail compartment was systematically delayered and we did not observe any items of evidentiary value.

Engine Compartment Inspection:

The engine compartment sustained severe fire damage. Most of the combustible materials and soft metals had been consumed during the fire. The battery cable remained along with the terminals to the battery. Adverse electrical activity was observed half way down on the conductor to the starter. The starter was examined and we did not observe any damage to the starter and the terminals were intact and free of damage. The alternator was examined and found to be free of damage.

Undercarriage Inspection:

The undercarriage was examined. The involved LLV was mounted on a GM frame. The frame rail components were undamaged. The associated fuel lines and filter system were intact and free of damage. The undercarriage was eliminated as the origin of the fire.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage and was consumed. The fire damage observed was a result of the fuse panel being exposed to the fire.

Area of Fire Origin:

Based on our observations and witness statements, it was determined that the area of fire origin was in the engine compartment.

Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of damage and the lack of remaining physical evidence.

Evidence Collected:

No evidence was collected at the time of the inspection.

Interview:

An interview was conducted with the mail carrier driving the vehicle at the time of the fire she provided the following information. While at a mail box she could smell something "electrical". She started to see black smoke from the sides and front of the engine compartment. While still in the driver's seat, she shut off the truck and grabbed the keys and scanner. While getting out, she could see flames under the engine compartment and flames dripping down. She had been on the road for about two hours. There were no prior issues with the LLV. She is the regular driver of that vehicle. She and a person at the neighboring house called 9-1-1. She is a smoker but never smokes in the vehicle.

Service Records:

A review of the provided service records for the involved LLV was conducted. The last scheduled service was completed on February 11, 2017. After a review of the service records, it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this

information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Scott S. Popovich

Scott S. Popovich, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CV

September 1, 2017
RCG File No. 44803291

Photograph 1
Front of LLV.



Photograph 2
Driver's side of LLV.



September 1, 2017
RCG File No. 44803291

Photograph 3
Rear of LLV.



Photograph 4
Mail side of LLV.



September 1, 2017
RCG File No. 44803291

Photograph 5
Interior of LLV.



Photograph 6
Engine compartment of LLV.



September 1, 2017
RCG File No. 44803291

Photograph 7
Undercarriage of LLV.



Photograph 8
Conductors and remains of fuse panel.



September 1, 2017
RCG File No. 44803291

CVs



SCOTT S. POPOVICH, CFPS, CFEI, CVFI, FIT FIRE CONSULTANT

Mr. Popovich's professional career includes 25 years with the Woonsocket Fire Department in the city of Woonsocket, RI. In that capacity he has been involved in many different emergency services including Deputy Director of Emergency Management, Assistant Fire Marshal, Lieutenant and Firefighter. As a licensed state of Rhode Island Assistant Deputy State Fire Marshal his duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Popovich has a Master of Science in Fire and Arson Investigation from the University of New Haven with a heavy concentration in forensics and a Bachelor of Science in Public Administration from Roger Williams University. He maintains certifications as a fire investigator and fire inspector and has attended numerous classes at the National Fire Academy and the Rhode Island State Crime Laboratory.

Mr. Popovich was recently recognized for project development for the planning and execution of Emergency Response Training for CVS Corporate Headquarters in Woonsocket, Rhode Island.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

M.S. – Fire and Arson Investigation – University of New Haven, Connecticut
B.S. – Public Administration – Roger Williams University, Rhode Island
A.S. – Fire Science – Community College of Rhode Island

Licenses and Certifications

Fire Investigative Technician (FIT) by the International Association of Arson Investigators
Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) by the National Association of Fire Investigators
Certified Fire Protection Specialist (CFPS) by the National Fire Protection Association
Certified Fire Inspector (CFI) by the National Fire Protection Association
Certified Evidence Collection Technician (ECT) by the International Association of Arson Investigators
Licensed Emergency Medical Technician by the State of Rhode Island
Licensed Oil Heat Technician
Licensed Hoisting Equipment Operator by the State of Rhode Island
Licensed Private Detective in the State of Rhode Island

Professional Memberships

IAAI (International Association of Arson Investigators)
RIIAAI (Rhode Island Chapter of International Association of Arson Investigators) Board Member



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
92 South Street
Hopkinton, Massachusetts 01748
Telephone: (508) 620-2255

October 4, 2019

Re: RCG File No: 100013363
LLV Number: 4308852
VMF Location: 55 Corliss Street Room 100 Providence, Rhode Island
Subject: Preliminary/Final Report

Dear

On September 6, 2019, a fire involving US Postal Service LLV 4308852 reportedly occurred at 7 Apple House Drive in Cranston, Rhode Island. The vehicle was manufactured by General Motors in 1994 and was a Grumman model LLV-94-RH, VIN: 1GBCS1046R2914890.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Providence, Rhode Island VMF located at 55 Corliss Street Room 100, Providence, Rhode Island. In the course of our work we inspected, photographed, and reviewed the vehicle repair and maintenance orders. The vehicle examination was conducted on September 10, 2019, by Fire Consultant Paul A. Doughty, IAAI-CFI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. Fire originated within the engine compartment while being operated.
2. The specific ignition sequence was inconclusive; however, a catastrophic internal failure of the engine could not be eliminated.

Observations

Exterior Inspection:

The exterior examination of the vehicle began at the front exterior and continued in a counter-clockwise direction. The hood, windshield and driver's compartment roof were extensively damaged and melted, the driver's side evidenced fire damage in the engine compartment and driver's compartment. The rear of the vehicle suffered minor fire damage to the cargo area. The mail side of the vehicle evidenced significant fire damage in the engine compartment and driver's compartment.

Interior Inspection:

The driver's compartment was examined and was severely damaged by fire. The driver's seat, dashboard, instrument cluster, and bulkhead were melted or consumed by the fire. The cargo area exhibited fire damage in the ceiling area. The damage increased nearer the driver's compartment. Several parcels of fire damaged mail were observed in the cargo area.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L, four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a direct ignition system. The engine compartment sustained significant fire damage throughout. An examination of the engine block was conducted. No holes or protrusions from the internal components within the engine were observed. No adverse electrical activity was observed or failures of the battery or accessory components were observed.

Undercarriage Inspection:

The undercarriage of the vehicle was examined and was unremarkable with the exception of the area under the engine compartment. Fuel lines on the undercarriage were intact along the frame rail. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

The fuse panel was positioned below the instrument panel in the dashboard on the driver's side and was significantly damaged by fire.

Area of Fire Origin:

The area of origin was determined to be the mail side of the engine compartment.

Potential Contributing Factors:

The operator's statement indicated hearing sounds and observing the operation of the engine that indicated internal damage, to the engine. We were unable to observe any external damage consistent with this report. Further analysis would require disassembly of the engine. No other contributing factors were identified.

Evidence Collected:

No evidence was collected.

Interviews:

Carrier reported a knocking sound that he described as, similar to a defective piston rod, entering Apple House Drive from Scituate Avenue while delivering rural route 11. Carrier pulled to the side of the road and reported that the engine would not turn over or restart. Carrier reported white/grey smoke then began emitting from air vents and exterior hood seams. Carrier exited the vehicle. Carrier called 911 and supervision. He then removed mail from front service tray and rear cargo compartment until smoke became black, acrid and prominent. Approximately 25 parcels were unable to be salvaged.

Fire then spread throughout engine compartment, cab and cargo compartment. Fire was extinguished by City of Cranston fire department. Contact information: LT Stephan Croft, Fire Prevention Division, 301 Pontiac Ave, Cranston RI 02910, 401-780-4043, 401-207-9608, 401-461-4227, firecar24@cranstonri.org.

Service Records:

It is reported that this vehicle was returned to the station from Mancinni Service Station on Friday 8/16/19 following service including muffler and alternator replacement. The LLV was in service on Saturday 8/17/19. Carrier noted no deficiencies during the daily inspection.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Paul A. Doughty

Paul A Doughty, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)\
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

October 4, 2019
Rimkus File No. 100013363

Photograph 1
View of the front.



Photograph 2
View of the driver's side.



October 4, 2019
Rinkus File No. 100013363

Photograph 3
View of the rear.



Photograph 4
View of the mail side.



October 4, 2019
Rinkus File No. 100013363

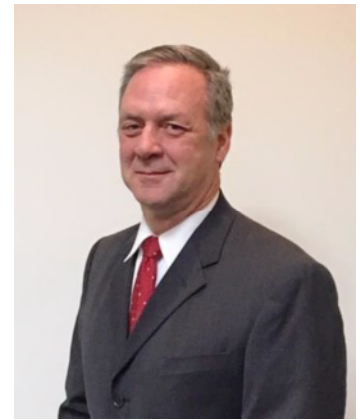
Photograph 5

View of the area of origin on the mail side of the engine compartment.



October 4, 2019
Rimkus File No. 100013363

Curriculum Vitae



Paul A. Doughty, Esq., CFI

Fire Consultant
Fire Division

Background

Mr. Doughty obtained his Juris Doctor from Roger Williams University School of Law and his B.S., Magna Cum Laude, in Fire Science from Providence College. Additionally, he is a graduate from the Providence Fire Department Fire Academy and the Providence Police Department Police Academy.

Mr. Doughty's professional career includes 30+ years with the Fire Department in the City of Providence, Rhode Island. During those years, his career progressed from firefighter to liaison officer to arson task force member to managing the activities and staff within the Arson Squad/Fire Investigation Division.

As the lead for the Arson Squad, his responsibilities included supervising investigative staff, managing fire and criminal investigations, conducting cause & origin investigations for commercial and residential fires. In addition, as a law enforcement officer, he executed arrest and search warrants for criminal offenses and assisted in the prosecution of those cases.

Mr. Doughty has testified in criminal and civil cases in federal and state courts. His law degree and legal practice experience compliment his investigative, expert witness and educator skills and capabilities.

Mr. Doughty is the recipient of awards that include Eta Lambda National Honor Society from Providence College, DAC Anthony V. Sauro Award, Heroic Action 2nd Class, Heroic Action 3rd Class, Meritorious Actions 1st Class, Unit Citations and the American Legion Medal of Valor from the Providence Fire Department and the Mayor's Award from the Providence Police Department.

Contact Information

(508) 620-2255
pdoughty@rimkus.com

92 South Street
Hopkinton, MA
01748



Rimkus Consulting Group, Inc.
1661 International Drive, Suite 400
Memphis, Tennessee 38120
(855) 782-4228 Telephone
(615) 883-4118 Facsimile

January 4, 2017

Re: RCG File No:

LLV Number: 53700861
VMF Location: 4308983
Subject: 685 South Third Street in Memphis, Tennessee
Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 4308983. The vehicle was examined at the USPS VMF located at 685 South Third Street in Memphis, Tennessee. The fire incident reportedly occurred on October 8, 2016, while the vehicle was being operated by Mr. Christopher McKinney.

In the course of our work, the vehicle was inspected and photographed and the VMF Manager was interviewed at the VMF in Memphis, Tennessee on October 28, 2016. Our work to complete this assignment was performed by Fire Consultant Jim Rummage, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin within the engine compartment was determined to be on the driver's (left) side in the area where the positive conductor from the battery to the starter was routed.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of mechanical damage to the positive conductor from the battery to the starter. This was caused by the conductor not being supported, causing the conductor to come into direct contact with metal engine components causing chafing. Physical damage was caused to the insulation on the conductor during normal vehicle operations, causing adverse electrical activity and a subsequent fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The exterior examination of the vehicle revealed that the aluminum exterior had sustained severe damage due to thermal heating that included the hood, right side front fender, passenger's front fender and the vehicle's roof above the operator's compartment. All of the vehicle's glass had failed due to thermal heating. The left front tires had been damaged by the fire. The greatest degree of fire damage was observed on the left side.

Interior Inspection:

The operator compartment of the vehicle was examined and fire damage was observed throughout. The majority of the combustible materials had been consumed by the fire. An examination of the electrical conductors located along the dash revealed that there was no physical evidence of adverse electrical activity.

Engine Compartment Inspection:

The engine compartment of the vehicle was examined and we observed that the majority of the combustible materials had been consumed by the fire. The soft metals along the left side had failed and/or softened due to thermal heating. The most significant fire damage was observed along the left side. This was consistent with the fire originating along the left side. The specific ignition sequence and cause of the fire was determined to be the direct result of mechanical damage to the positive conductor from the battery to the starter. This was caused by the conductor not being supported, causing the conductor to come into direct contact with metal engine components. Physical damage was caused to the insulation on the conductor during normal vehicle operations, causing adverse electrical activity and a subsequent fire. The vehicle was equipped with a 2.2 Liter H.E.I. gasoline engine.

Undercarriage Inspection:

The undercarriage of the vehicle was examined and we observed moderate fire damage in the engine compartment area. The involved LLV was mounted on a GM frame with a GM fuel filter system. Fire damage in this area was due to fire extension and was not the area of fire origin.

Fuse Panel Inspection:

Due to the extensive fire damage, the fuse panel could not be inspected.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment on the left side in the area where the positive conductor was routed from the battery to the starter.

Potential Contributing Factors:

The physical evidence indicated that the positive battery conductor to the starter had sustained mechanical damage due to chafing during normal operations of the vehicle. It did not appear that this conductor had been secured in the engine compartment prior to the fire and was allowed to somewhat move freely causing the damage.

Evidence Collected:

No evidence was collected for laboratory examination.

Interviews:

On October 29, 2016, Mr. who was the operator of the vehicle at the time of the fire event reported the following information. He was approximately five hours into his route when he turned the engine to the "off" position while making deliveries. He attempted to restart the engine and it would not "crank over". He called in a "Road Call" and another vehicle was brought to his location. He then observed smoke coming from around hood where it meets the fenders. Flames were first observed coming from the same location and nearest the windshield. He did not smell any unusual odors and there were no visual or audible warning indicators prior to the fire.

Service Records:

A review of the service records provided for the involved LLV indicated that the last PM performed was on. There was no other listed work that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

James P. Rummage

James P. Rummage, II, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

January 4, 2017
RCG File No. 53700861

Photograph 1

LLV 4308983, the vehicle was examined at the USPS VMF located at 685 South Third Street in Memphis Tennessee.



Photograph 2

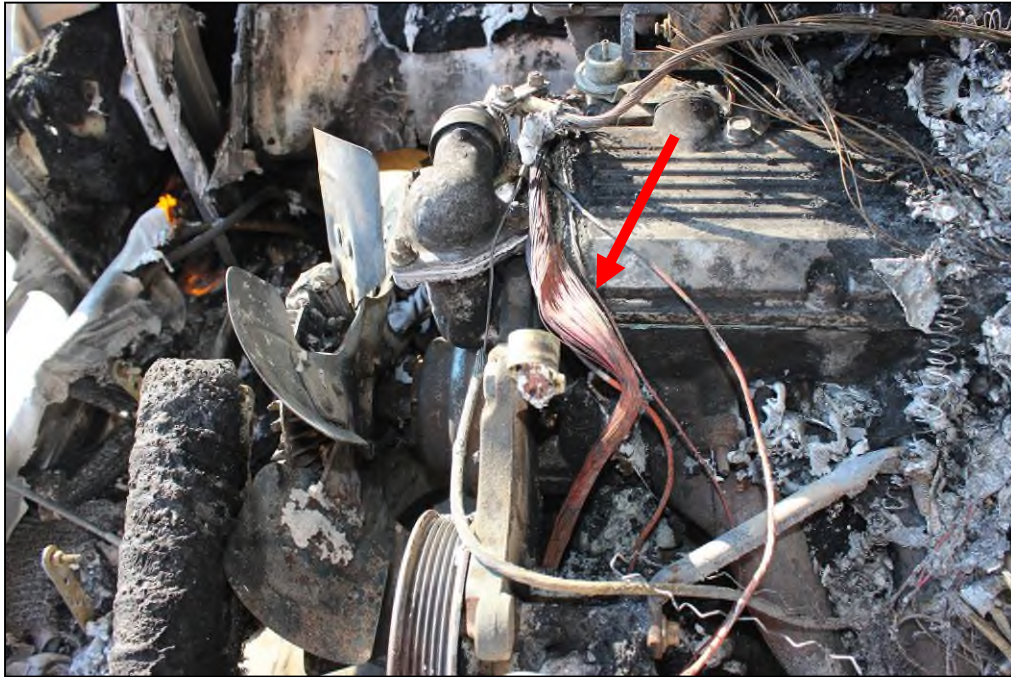
Overhead view of the engine compartment from the front bumper, the circle indicates the area of origin.



January 4, 2017
RCG File No. 53700861

Photograph 3

View of the left side of the engine, arrow indicates the routing of the positive battery conductor to the starter.



Photograph 4

The positive battery conductor was observed severed due to adverse electrical activity. The plastic insulation was damaged in this area due to not being supported away from the sharp metal edges.



January 4, 2017
RCG File No. 53700861

CVs



JAMES RUMMAGE, IAAI-CFI, CFEI, CVFI FIRE CONSULTANT

Mr. Rummage studied Fire Science at Tennessee State University. His professional career includes 30 years with Brentwood Fire and Rescue. In that capacity he has been involved in many different emergency service positions including Driver Engineer, Station/Line Officer, Fire Safety Inspector, and Fire Investigator. As a Tennessee State Certified Fire Inspector, Fire Service Instructor, and IFSAC Certified Fire Officer he is involved with code compliance, fire safety analysis, special events, safety management, firefighter training, and commercial and residential fire emergency operations. Additionally, his professional career has included more than 12 years' experience conducting private fire and explosion investigations in a multi-state area.

Mr. Rummage's forensic experience encompasses the investigation of fire and explosion causation involving vehicles, motor homes, motor coaches, boats, maritime vessels, off-road equipment, industrial, commercial, and residential structures. Areas of expertise include management of fire scene analysis, evidence and data collection, monitoring of destructive and non-destructive testing, investigative interviews, scene photography, accelerant testing, and NFPA fire code compliance.

Mr. Rummage is an IAAI-Certified Fire Investigator, a NAFI Certified Fire and Explosion Investigator, and NAFI Certified Vehicle Fire Investigator. He has conducted classroom and hands-on classes in fire origin and cause identification.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Electronics Engineering, Austin Peay State University
Criminal Justice, Hopkinsville Community College
Fire Science Technology, Tennessee State University
Member, International Association of Arson Investigators
Member, Tennessee Chapter International Association of Arson Investigators
Member, National Association of Fire Investigators
Board of Directors, Tennessee Advisory Committee on Arson
Membership Committee, National Association of Professional Insurance Investigators
Certified Fire Inspector, State of Tennessee
Licensed Private Investigator, State of Arkansas, Kentucky and Tennessee
Certified Fire, Explosion and Vehicle Fire Investigator, National Association of Fire Investigators (NAFI)
Certified Fire Investigator, International Association of Arson Investigators (IAAI)
Certified Fire Investigator NFPA, National Board on Fire Service Professional Qualifications – Pro Board
Certified Firefighter III, TN Commission on Firefighting
Certified Fire Instructor I, TN Commission on Firefighting
Certified Fire Officer I (IFSAC), TN Commission on Firefighting



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
7851 Woodland Center Boulevard
Tampa, Florida 33614
(800) 498-3060 Telephone
(813) 289-5440 Facsimile
Certificate of Authorization No. 8301

January 9, 2019

Re: RCG File No: 41119952
LLV Number: 4309372
VMF Location: 1661 Ringling Boulevard Sarasota, Florida
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was requested to examine the vehicle fire loss involving USPS LLV 4309372, VIN 1GBCS1045R2915397 occurred in Arcadia, Florida on November 9, 2018. In the course of the work, we examined and documented the fire-damaged vehicle on December 11, 2018.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility. The work to complete this assignment was performed by Fire Consultant Alexander F. Kapczynski, IAAI-CFI. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment in the area of the bulkhead on the left (mail) side of the vehicle.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a leak in the fuel injector throttle body or the fuel system and the atomized gasoline vapor coming in contact with a competent ignition source within the engine compartment.

Observations

Exterior Inspection:

The exterior examination of the fire-damaged vehicle commenced from the front of the LLV and continued in a clockwise rotation. The fire-damaged vehicle was found inside a bay of the VMF. The inspection revealed that the vehicle sustained severe fire damage throughout the LLV. Fire patterns indicated that the fire originated within the engine compartment and spread towards the rear of the vehicle. The left side of the vehicle sustained greater damage as compared to the right side or driver's side. The vehicle sustained severe fire damage to the left side of the vehicle and roof over the driver's compartment. A large portion of the aluminum body had been consumed by the fire. The rear tires were intact and the front left tire sustained greater damage as compared with the front right tire.

Interior Inspection:

The interior inspection revealed severe fire damage in the driver's compartment and moderate fire damage in the cargo compartment. The vehicle's identification plate was intact and the VIN was confirmed to be 1GBCS1045R2915397 and the vehicle was manufactured in June, 1994.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. The engine compartment sustained severe damage and the fire appeared to have lasted an extended period of time before being extinguished. The remains of the battery were positioned on the right side of the engine compartment. The positive and negative large conductors that had been connected to the battery were present and displayed no evidence of adverse electrical activity.

The fuel filter was positioned along the left side of the undercarriage and was intact. The fuel lines were examined between the fuel tank and the engine compartment. A fuel line was found to be partially dislodged behind the engine where the rubber hose attached to a metal fitting. The majority of the fire damage was observed in front of the partially dislodged fuel line.

Undercarriage Inspection:

The undercarriage was inspected and fire patterns found along the undercarriage revealed that the fire travel from the front of the vehicle towards the rear. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head.

Fuse Panel Inspection:

The fuse panel normally positioned in the driver's compartment below the steering column was consumed by the fire and could not be examined.

Area of Fire Origin:

Fire patterns indicated that the fire originated within the engine compartment and spread towards the rear of the vehicle. The path of fire travel appeared to have originated on the left, rear side of the engine compartment and traveled towards the right side of the cargo compartment

Potential Contributing Factors:

There were no contributing factors identified. The last preventive maintenance inspection was conducted several months before the fire incident in September, 2018.

Carrier Interview:

On January 4, 2019, a phone interview was conducted with Mr., Mr. was the mail carrier who was driving LLV 4309372 when the fire occurred. During the interview, Mr. stated that the fire occurred near 801 Parkview Road in Arcadia, Florida, between 1:30 P.M. and 2:00 P.M. The vehicle was operating properly before the fire occurred and there were no backfires or engine anomalies.

As he was making deliveries, he noticed an odor of gasoline as he pulled up to a mailbox and turned off the engine. When he turned the engine back on he heard a "boom" sound and then smoke came from the engine compartment. He then saw

flames near the left side of the front hood. He got out of the vehicle, called his supervisor, and removed all the mail and packages from the vehicle.

Evidence Collected:

No items evidentiary value or artifacts were collected during the vehicle inspection.

Service Records:

A review of the provided service records for the involved LLV was conducted. Service records reveal several issues with the fuel pump over a period of time prior to the fire. The fuel pump was replaced July, 2018. The last preventive maintenance was conducted on September 7, 2018.

After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Alexander F. Kapczynski

Alexander F. Kapczynski, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

January 9, 2019
RCG File No. 41119952

Photograph 1

The fire-damaged vehicle was completely wrapped and preserved prior to our inspection.



Photograph 2

Front view of fire-damaged LLV 4309372.



January 9, 2019
RCG File No. 41119952

Photograph 3

The front left side of the vehicle sustained greater damage as compared with the front right side.



Photograph 4

View of the driver's side or right side of LLV 4309372.



January 9, 2019
RCG File No. 41119952

Photograph 5

Rear view of the fire-damaged postal vehicle.



Photograph 6

View of the cargo space.



January 9, 2019
RCG File No. 41119952

Photograph 7

View of the undercarriage from the rear of the vehicle.



Photograph 8

The muffler look like it had expanded from a possible backfire.



Photograph 9

The fuel line appeared to be slightly dislodged.



Photograph 10

View of the fuel lines from the undercarriage.



January 9, 2019
RCG File No. 41119952

Photograph 11

View of the right side of the engine.



Photograph 12

View of the left side of the engine compartment.



January 9, 2019
RCG File No. 41119952

Curriculum Vitae



**ALEXANDER F. KAPCZYNSKI, IAAI-CFI
FIRE CONSULTANT**

Mr. Kapczynski is a Certified Fire Investigator with the International Association of Arson Investigators (IAAI-CFI), the National Board of Fire Service Professional Qualifications and a New York State Certified Level II Fire Investigator with the New York State Office of Fire Prevention and Control. Mr. Kapczynski is a licensed private investigator in the State of Florida. He served in the City of Albany Fire Department for over twenty one years and was a Lieutenant in the City of Albany's Fire Investigation Unit (FIU) for approximately four years. As a member of the FIU, Mr. Kapczynski investigated and determined the origin and cause involving commercial structures, residential structures and vehicles. Mr. Kapczynski has testified on multiple occasions in criminal proceedings pursuant to his duties as a fire investigator.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

City of Albany Fire Department, Albany, New York
Firefighter Essentials, 1992

Hudson Valley Community College, Troy, New York
Emergency Medical Technician Paramedic Level, 1996

Corning Community College, Corning, New York
Associates Degree, Fire Protection Technology, 1997

New York State Fire Academy, Montour Falls, New York
Hazardous Materials Specialist Training, 1998

New York State Fire Academy, Montour Falls, New York
Fire Behavior & Principles of Fire Investigation, 2007

New York State Fire Academy, Montour Falls, New York
Fire Arson Investigation, 2007

International Association of Arson Investigators, Rutland, Vermont
Advanced Fire Investigation Techniques Seminar, 2008

New York State Fire Academy, Montour Falls, New York
Electrical Cause Determination I & II, 2009

International Association of Arson Investigators, Charlotte, North Carolina
Expert Report Writing, 2010

New York State Fire Investigators & ATF, Colonie, New York
Arc Mapping Seminar, 2010



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
7851 Woodland Center Boulevard
Tampa, Florida 33614
(800) 498-3060 Telephone
(813) 289-5440 Facsimile
Certificate of Authorization No. 8301

May 20, 2019

Re: RCG File No: 41120253
LLV Number: 4309380
VMF Location: 100 South Belcher Road Clearwater, Florida
Subject: Preliminary/Final Report

Dear

Rimkus North Carolina, PLLC was retained to examine a 1994 Chevrolet LLV 4309380, VIN 1GBCS1043R2924857. The vehicle was examined at the USPS Clearwater Aux VMF. The fire incident reportedly occurred at 2465 Matheson Avenue in Spring Hill, Florida on March 10, 2019.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on March 22, 2019. Our work to complete this assignment was performed by Fire Consultant Todd Spear, IAAI-CFI. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection's NFPA 921 – "Guide for Fire & Explosion Investigations" and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. An analysis of the observable fire patterns and physical evidence indicated that the specific area of fire origin within the engine compartment was at the center rear of the engine compartment.

3. The specific ignition sequence and cause of the fire was engine oil leaking from the valve cover gasket and running downward to the hot surface of the transmission below, where it was heated to its ignition temperature.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed in the engine compartment and the mail compartment. Total mass loss was observed to the windshield, engine hood assembly, front fenders and grill, dashboard, and multiple engine components. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, the two front LLV tires had been replaced to facilitate moving the vehicle. Bystander photos showed the two front tires burned to deflation. The two rear tires were undamaged. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage to the driver side compartment and smoke staining to the cargo area. Minor fire damage was observed in the cargo area. The most severe fire damage and mass loss was observed to the engine compartment, front-end assembly, dashboard area, firewall, steering wheel assembly, and driver's seat.

The most severe fire damage was observed at the bulkhead, dashboard, windshield, and steering column. The burn patterns observed to the interior area progressed upward and outward from the engine compartment. After a review of the progression of the burn patterns, it was determined the fire progressed from the engine compartment into the mail side compartment through the manufactured holes in the bulkhead and due to the failure of the windshield.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder gasoline engine. Severe fire damage was observed throughout the engine compartment including mass loss to the belts, hoses, wiring harnesses, and multiple components. The air filter cover and filter were consumed by fire or lost in transit. Electrical wires that transverse the area within the engine compartment and the bulkhead at the passenger compartment were examined and found to have all of the insulation burned away, but no adverse electrical activity was observed. The ECM was

severely damaged, but no adverse electrical activity was observable in the field. There was no observable evidence that the electrical wiring and wire harnesses were a cause of the fire. The fuel system was examined and found to be severely damaged and there was total mass loss to several components, but the burn patterns did not implicate this area as the origin of the fire.

The battery for the vehicle was located at the front right side of the engine compartment and had severe fire damage and total mass loss to the entire battery. The battery terminals and battery cables were examined and found with the insulation burned away. The lengths of both the positive and negative battery conductors were examined and no adverse electrical activity was observed. There was no sign of adverse electrical activity to either of the terminal connections. The battery terminals and battery cables exhibited no evidence of being the cause of the fire.

The carburetor was examined and observed with severe fire damage to the top portion of the carburetor where the air filter housing was mounted. The standard ignition coil, ignition module, and wiring assembly were examined and observed with severe fire damage and significant mass loss to the majority of the components. Due to the severe fire damage and total mass loss, the ignition coil, ignition module, and wiring assembly could not be eliminated as a contributing factor to the fire.

An examination of the engine block and oil pan was conducted. No engine block or oil pan damage was observed. The valve cover was examined and there were two sections of the valve cover gasket protruding from the proper positioning: one at the left side of the engine near the front, and the other at the right corner of the rear of the cover. The protruded section at the right rear showed burning to the exposed gasket, while the left side gasket showed unburned gasket protruding. We removed the valve cover and noted that the right rear bolt was only finger tight and did not require a tool to remove. The two left bolts were snug, but easily removed. The two right side bolts and the front bolt were tight and were removed with a power tool. Upon the removal of the valve cover, the gasket at the left rear corner exhibited a path for oil to travel past the gasket as it was not properly seated in the channel for the gasket. Similarly, the right rear corner of the valve cover gasket had similar damage at the area observed protruding from under the valve cover. There was encrusted burned oil residue across the rear of the cylinder head.

An examination of the progression of the burn patterns and severe fire damage was conducted. Based on the fire patterns observed, the rear of the engine within the engine compartment was determined to be the area of origin.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle, except for the area within the engine compartment where the frame was exposed to heat from the

compartment fire. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block, and separated at the combustible connections. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment at the rear of the engine.

Fuse Panel Inspection:

Examination of the fuse panel revealed severe fire damage and mass loss to the panel and all of the fuses. Due to the severe fire damage and mass loss, we were not able to determine if any fuses were blown.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the engine compartment at the area of the rear of the engine.

A bystander photo of early fire development shows flames first showing in the area above this area of fire origin.

Potential Contributing Factors:

The LLC was in use on the day of the fire. The carrier had noted the vehicle had good power and no problems or unusual issues on the day of the fire. The carrier was making deliveries and had pulled to the side of the road and shut off the vehicle, exited to deliver a package. When she turned back to the vehicle, there was black smoke coming from the engine compartment.

Nine days prior to the fire, the fuel injector, spark plugs, fuel pump relay, upper intake manifold gasket and engine wiring harness were replaced. The carrier reported the vehicle had been operating properly after the repairs.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

On March 22, 2019, an interview via telephone was conducted with the carrier at the Spring Hill post office. Ms. reported the following information:

- Ms. was the regular driver of the vehicle. She had the vehicle out all day and had no problems or issues with the vehicle prior to the fire.

- Ms. stated she had pulled into a subdivision and pulled to the side of the road, turned the engine off, and left the vehicle to deliver a package across the street. When she turned back to return to the vehicle, she saw black smoke coming from the engine compartment. She ran to the rear of the vehicle and removed the remaining mail from the vehicle, called her supervisor, and called 911.
- Ms. stated that while she was on the phone with her supervisor, she saw flames coming from the engine compartment at the windshield.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were recent repairs and service that may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Todd A. Spear

Todd A. Spear, IAAI-CFI, NAFI CVFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

May 20, 2019
RCG File No. 41120253

Photograph 1

Overview of loss vehicle.



Photograph 2

Damage at engine compartment and cab.



Photograph 3

Unseated gasket at right rear of valve cover.



Photograph 4

Unseated gasket at left rear of valve cover.



Photograph 5

Rear of cylinder head showing encrusted oil residue.



Photograph 6

Bystander photo of early fire development.



May 20, 2019
RCG File No. 41120253

Curriculum Vitae



Todd A. Spear, CFI, CVFI

Fire Consultant
Fire Division

Background

Mr. Spear holds a B.A. in Mass Communications and is a Certified Fire Investigator, Certified Vehicle Fire Investigator and Florida Private Investigator among other fire related certifications.

In his fire service experience, he served as the Fire Marshal for the City of Tampa and was a Division Chief with Tampa Fire Rescue for 13 years.

He has extensive experience in fire and explosion investigation, fire inspection, fire code compliance and interpretation, report writing, and courtroom testimony. His expertise covers over 40 years, with 34 years in public sector fire service and eight years as a private fire investigator. In that time, he has investigated more than 1,450 fires in a variety of single and multi-family residential structures, commercial and industrial properties as well as vehicles and heavy equipment. He has investigated large loss and fatality fires and has been responsible for complex joint exams. He has testified in state and federal courts for criminal and civil cases and has been deposed as an expert witness.

Contact Information

(813) 289-3060
tspear@rimkus.com

7851 Woodland Center
Blvd.
Tampa, FL 33614

Professional Engagements

- Fire/Arson/Explosion Investigations
 - Single family residence – Ft. Lauderdale, FL (2017), significant damage. The inspection determined that this fire was Arson, identifying multiple points of origin.
 - High-Rise Residential – West Palm Beach, FL (2015), minor fire damage, significant water damage from suppression system. The inspection determined that the fire began at a pot on the stovetop which was extinguished by the fire sprinkler system. A failure in the fire alarm system (maintained by a separate vendor) allowed the water to flow long enough to damage multiple floors.
 - Single Family Residence – Cocoa, FL (2015), Residence with significant damage. Inspection determined that this fire was arson.
 - Apartment Fire – Gainesville, FL (2014), 16-unit apartment building, total loss. Inspection determined the fire was caused by a lightning strike.
 - Single Family Residence – New Smyrna Beach, FL (2014), Fire in residence with significant damage. Inspection determined fire began in an ozone generator placed to remove cigarette odor. The equipment was found to not be UL listed.

- Church Fire – Jacksonville, FL (2012), Led and coordinated joint inspection with 35 participants. Over multiples days of site and lab inspections, determined cause was a failure in a multi-receptacle surge suppressor (\$1.2 million loss).
- Recreational Vehicle fire – Ridge Manor, FL (2012), total loss. The inspection determined the fire began as a result of a failure in a recalled adsorption refrigerator.
- Tractor Trailer fire – St. Augustine, FL (2012), total loss. The inspection determined the fire was caused by a wheel bearing.
- Task Forces
 - Gasoline station, collision and fire death – Tampa, FL (1994). Two young adults were racing up a crowded street when one veered though a gas station lot, striking and shearing a fuel dispenser. Due to an improper installation of the “shear valve” the resulting fire killed a toddler in a vehicle at the fuel island. The driver was convicted in criminal court for his actions, and the surviving parents prevailed in civil court against the corporate owner of the station for \$7 million.
 - Hotel fire – Tampa, FL (1991), Arson to conceal homicide. An individual stabbed an occupant in the room, and then set fire to the bed in an attempt to conceal the evidence. He was convicted and served 11 years in Florida State Prison.
 - Arson Homicide – Tampa, FL (1989), Led investigation where defendant poured and ignited gasoline which resulted in the death of his stepdaughter. He was sentenced to life in Florida State Prison.

Forensic Engagements

- Fire/Arson/Explosion Investigations – Vehicles
 - Winter Park, Florida (2018). Vehicle fire as a result of anti-lock braking system controller failure.
 - Port Jacksonville, Jacksonville, FL (2018), Determined \$600,000 loss of container handler; result of a burst fuel line connector.
 - Lulu, FL (2017) Backhoe fire. The \$300,000 loss began at the hydraulic lines at the rotator, and the evidence was spoliated by the transport vendor preventing a final determination of cause.
 - Ridge Manor, FL (2012), total loss Recreational Vehicle fire –. The inspection determined the fire began as a result of a failure in a recalled adsorption refrigerator.
 - Spring Hill, FL (2016). Vehicle battery shifted and terminal shorted against bracket.
 - St. Augustine, FL (2012), Total loss tractor trailer fire. The inspection determined the fire was caused by a wheel bearing.
- Appliances/Electrical Devices
 - Orlando, FL (2013), Clothes dryer in single family residence. Safety pin migrated behind drum and shorted heater coil.
 - Jacksonville, FL (2013), Electrical failure in dryer power cord in single family residence
 - Seminole, FL (2015), Electrical failure in washing machine control panel at residence
 - Lakeland, FL (2018), Clothes dryer fire, single family residence. Vent obstructed by lint.

Professional Experience

- Rimkus Consulting Group, Inc.

2017 – Present

- Fire Consultant – Eastern Division

Responsible for investigating the origin and cause of fires and explosions in residential, commercial, and industrial occupancies, in vehicles and heavy equipment, and in industrial equipment and processes, utilizing methodology contained in NFPA 921 and NFPA 1033 and related applicable codes and standards; evaluation of fire code compliance and effects relative to fire protection systems, building features, and life safety concerns (present or lacking) in premises and structures; investigations of fires suspected to have originated from appliances, products, or other energized devices, due to failure, installation, or service concerns; investigation of accidental, incendiary, and fraudulent fires; documenting examinations, preservation of significant artifacts, and writing detailed reports; review reports and investigations of others for sufficiency of methodology and conclusions.

- G4S Compliance and Investigations

2015 – 2017, 2011-2013

- Fire Investigator

Responsible for investigating the origin and cause of fires and explosions, documenting examinations, writing detailed reports.

- Jack Ward Fire Consultants

2013 - 2015

- Fire Consultant

Responsible for investigating the origin and cause of fires and explosions, documenting examinations, writing detailed reports.

- Tampa Fire Rescue

1981 - 2009

- Fire Marshal

Responsible for managing the fire prevention program for the City of Tampa, responsible for fire inspection, new construction plan review, and fire/arson investigation, overseeing a staff of 23, wrote policy and procedure for Fire Prevention staff, prepared local ordinances, functioned as the 'authority having jurisdiction' under Florida Statutes to interpret and apply fire code within the City of Tampa.

- Chief of Personnel

Responsible for human resources function for 630 personnel, including selection and hiring, discipline administration, labor agreement grievances, managed department occupational health clinic staffed with an RN and two LPNs to serve 580 personnel.

- Assistant Fire Marshal

Responsible for operational control of the Tampa Fire Marshal's Office, with four divisions (Existing Inspections, New Construction Inspections and Plan Review, Fire/Arson Investigations, Clerical Support) and 22 employees.

- Fire Investigator

Responsible for investigating the origin and cause of fires and explosions, completing latent investigations, documenting examinations, writing detailed reports, writing and applying for search and arrest warrants,

conducting arrests, preparing criminal cases for prosecution.

- **Public Affairs Officer**
Responsible for media relations and as liaison, produced departmental annual report and internal communications.
- **Public Education Officer**
Responsible for fire safety and prevention education programs for targeted groups and the general public.
- **Fire Inspector**
Responsible for conducting fire inspections and fire code compliance of commercial and multi-family residential buildings.
- **Firefighter**
Responsible for operational fire suppression and emergency medical rescue.
- **Temple Terrace Fire Rescue** 1974 - 1981
 - **Firefighter**
Responsible for operational fire suppression and emergency medical rescue, positions both career and volunteer.

Education, Certifications, and Awards

- Mass Communications (Public Relations), Minor in Anthropology (Archaeology), B.A.: University of South Florida (1980)
- Certified Fire Investigator: International Association of Arson Investigators (2012)
- Certified Fire Investigator: National Board on Fire Service Professional Qualifications (Pro Board) (2012)
- Certified Vehicle Fire Investigator: National Association of Fire Investigation International, 2016
- Private Investigator: Florida 2011
- Firefighter (1978-2016)
- Fire Inspector (1983)
- Fire Service Instructor III
- Emergency Medical Technician (1976-2014)
- Law Enforcement Officer (1987-2009)
- Memberships: International Association of Arson Investigators, National and Florida Chapter; Florida Advisory Committee on Arson Prevention, Rewards Committee member; International Association of Fire Chiefs; Florida Fire Marshals and Inspectors Association; National Fire Protection Association, 2005-2016; International Fire Marshals Association, 2005-2016

Continuing Education

- International Association of Arson Investigators,
 - Florida Chapter Area Training Conference, Tampa, FL, 28 hrs. tested (Oct. 15-18, 2018)
 - Florida Chapter Area Training Conference, Tampa, FL, 27 hrs. tested (Oct. 16-19, 2017)
 - Florida Chapter Fire/Arson Investigation School, 1-week school, Tampa, FL (1993)
 - National Conference Clearwater, 1 week seminar (1989)
 - 2013 International Training Conference, Orlando, FL, (May 6-10, 2013)
- Best Practices in Community Risk Reduction, National Fire Academy (Feb. 22-23, 2017)
- Firesafety Inspector, National Fire Protection Association Fire Code (NFPA 1) and Life Safety Code (NFPA 101), Tampa, FL (March 20, 2018)
- Hands-on Vehicle Fire/Arson Investigation, Public Agency Training Council, High Point Fire Department, High Point, NC, 20 hrs. tested (Aug. 1-3, 2016)
- Ring of Fire, Florida Advisory Committee on Arson Prevention, 38th Annual Seminar, Florida State Fire College, Ocala, FL, 13 hrs. non-tested (Nov. 4-6, 2015)
- OSHA 24-hr HazWaste Operations Certification, Safety Compliance Management, Inc., 24 hrs. tested (May 5, 2015)
- Electric/Hybrid/Fuel Cell Safety Course for Trucks, Buses, and Commercial Fleet Vehicles, National Fire Protection Association on-line class, (Nov. 6, 2014)
- Complex Arson Investigation Techniques for the Insurance Industry, 2014, International Association of Arson Investigators and Bureau of Alcohol, Tobacco, Firearms and Explosives, Glynco, GA, 41 hrs. tested (2014)
- Hazardous Materials Response-Awareness Level, Michigan State University-School of Criminal Justice, East Lansing, MI, virtual classroom, 3 hrs. tested (2013)
- Florida Advisory Committee on Arson Prevention, 35th Annual Training Conference, “Arson, Red Flags, and More...” 3-day seminar (Nov. 14-16, 2012)
- Florida Fire Marshals and Inspectors Association
 - Kitchen Hoods and Fire Suppression Systems, Clearwater, FL, 4 hrs. (Nov. 2, 2012)
 - An AHJ’s Guide to Water Based Special Hazard Systems, Tampa, FL, 14 hrs. (May 14-15, 2010)
- Fire Investigation Relating to Electricity, Gas and Gas Explosions, Flashover, and Unusual Burn Patterns, IAAI Florida Chapter and PARCO, Clearwater, FL, 1-day school tested (May 24, 2012)
- Florida Arson Seminar, Florida IAAI and Florida Fire Marshals and Inspectors Association
 - 4 day school tested, Orlando, FL (Oct. 18-21, 2010)
 - 4 day school tested, Orlando, FL (Oct. 18-21, 2010)
- International Symposium on the Forensic Aspects of Arson Investigations, Federal Bureau of Investigations, Fairfax, VA, (July 31-Aug. 4, 1995)
- Financial Fraud Investigations, 2 week school, Federal Law Enforcement Training Center, Glynco, GA (1990)
- Florida Arson Seminar (State Fire Marshal), 1 week seminar, (1989)
- Fire/Arson Investigations, National Fire Academy, Emmitsburg, MD, 2-week school (1988)
- Florida Advisory Committee for Arson Prevention
 - 3-day seminar (1986)
 - 3-day seminar (1985)



Rimkus Consulting Group, Inc.
159 Crocker Park Boulevard Suite 400
Westlake, Ohio 44145
Telephone: (614) 948-0551

November 19, 2019

Re: RCG File No: 100017171
LLV Number: 4309410
VMF Location: 2680 Cleveland Avenue Canton, Ohio
Subject: Preliminary/Final Report

On October 8, 2019, a vehicle fire occurred at 1000 N. Chapel Street in Louisville, Ohio. On October 18, 2019, Rimkus Consulting Group, Inc. was retained to examine LLV 4309410, VIN 1GBCS1045R2915433. On October 24, 2019, we examined the LLV at the VMF located at 2680 Cleveland Avenue in Canton, Ohio. Our work to complete this assignment was performed by W. Timothy Spradlin, IAAI-CFI (V). This report was reviewed by David R. Meyers, IAAI-CFI (V), Technical Fire Manager

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. There was no visible fire damage observed on the vehicle's interior or exterior, only minor smoke damage to the engine compartment.
2. Based on observed fire damage patterns and the data collected, the area of fire origin was determined to be on the exhaust crossover pipe below the transmission. Fire damage was limited to the immediate area of the transmission.

3. Based on the observed fire patterns and data collected, we determined that an unknown mechanical failure allowed transmission fluid to leak out. The fluid contacted the crossover exhaust pipe causing a hot surface ignition of combustible liquid.

Observations

Exterior Inspection:

There was no visible fire damage observed on the vehicle exterior.

Interior Inspection:

There was no visible fire damage observed on the vehicle's interior.

Engine Compartment Inspection:

We observed minor smoke staining on the right lower firewall area of the engine compartment. The engine was a 2.2 liter with fuel injection and standard coil.

Undercarriage Inspection:

We observed oil residue on the transmission bell housing, filter inspection plate, exhaust crossover pipe, driver side frame, and muffler. We observed fire damage to the driver side of the transmission housing and electric circuit adjacent. We observed heat oxidation patterns on the exhaust crossover pipe. The frame was a GM replacement.

Fuse Panel Inspection:

The fuse panel was observed to be intact and undamaged.

Area of Fire Origin:

Based on observed fire damage patterns and the data collected, the area of fire origin was determined to be on the exhaust crossover pipe below the transmission. Fire damage was limited to the immediate area of the transmission.

Potential Contributing Factors:

We observed the transmission fluid level was very low as indicated on the dipstick. The transmission fluid was also very dark in coloring and had a burnt odor. The fluid on the undercarriage of the vehicle was determined to be the transmission fluid. Based on the observed fire patterns and data collected, we determined that an unknown mechanical failure allowed transmission fluid to leak out. The fluid contacted the crossover exhaust pipe causing a hot surface ignition of combustible liquid.

Evidence Collected:

No evidence was taken.

Interviews:

On October 24, 2019, we conducted a telephone interview with the postmaster. He stated the LLV had a fluid leak but they did not report it to the VMF because it seemed minor based on the amount of oil on the parking lot. He stated the carrier was on vacation and unavailable for an interview. She had told him there was smoke in the cab while driving on her route. She was close to the post office so she returned. He called the fire department. He raised the hood on the LLV and observed a small fire at the lower rear of the engine compartment near the transmission. He used a portable fire extinguisher to extinguish the fire. The fire department arrived and used a small amount of water.

On October 24, 2019, we conducted an interview at the Louisville Fire Department. He provided a copy of their incident report. He stated the fire was out on their arrival. They cooled the engine with a water hose. He observed a large quantity of oil on the pavement under the LLV. They used dry absorbent material to soak it up.

Service Records:

On October 24, 2019, we conducted an interview with the VMF manager. He provided 12 months of maintenance records for the LLV. He stated the LLV had a new Jasper engine replacement in July 2019. That engine had thrown a rod, cracking the block and causing motor oil to leak onto the undercarriage. A second new Jasper engine was installed by Stan's Towing on August 26. The LLV was returned to service on September 4, 2019. The post office had not reported any problems with the LLV since. He speculated that the torque converter in the transmission could have been displaced during the engine changes, causing the leak that caused the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Spradlin

William T. Spradlin, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manger

Attachments: Photographs, Curriculum Vitae

November 19, 2019
Rimkus File No. 100017171

Photograph 1

There was no damage observed to the exterior of the LLV.



Photograph 2

There was no damage observed to the exterior or interior of the LLV.



Photograph 3

There was no damage observed to the top section engine compartment of the LLV.



Photograph 4

The transmission fluid level was observed to be very low.



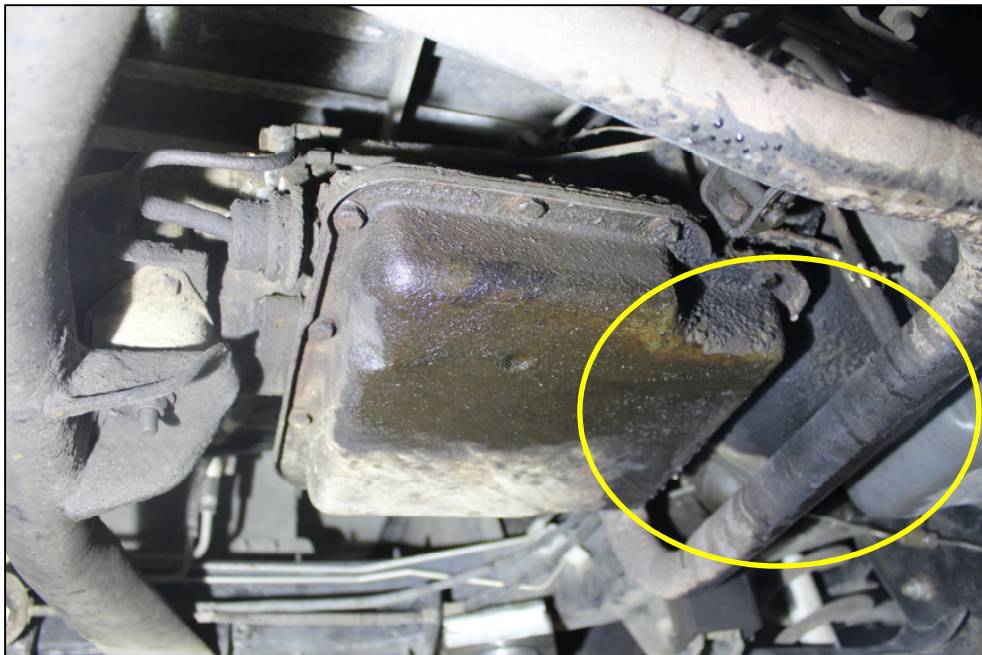
Photograph 5

Area of fire origin was at the exhaust crossover pipe below the transmission.



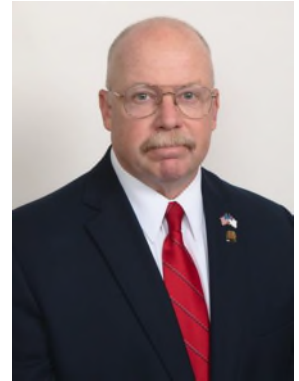
Photograph 6

Area of fire origin at exhaust pipe below the transmission.



November 19, 2019
Rimkus File No. 100017171

Curriculum Vitae



William T. Spradlin, CFI(V), CFEI, CVFI

Fire Consultant
Fire Division

Background

Mr. Spradlin is an IAAI Certified Fire Investigator, a NAFI Certified Fire Explosion Investigator, and NAFI Certified Vehicle Fire Investigator. He is also certified in the State of Ohio as a Police Officer and Basic Police Academy Instructor.

He has over 35 years' experience in public safety, firefighting, law enforcement, and investigation. Mr. Spradlin also served in the U.S. Air Force, where he served four years active duty and 26 years in the Reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant/First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the U.S. Army in 2007 for combat meritorious service.

His fire/explosion investigation work spans over 26 years, and he has three related college degrees. His career includes work as a full-time firefighter, lieutenant, captain, deputy fire chief and fire chief. Mr. Spradlin also served as a deputy sheriff with the Greene County, Ohio Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He served for over 6 years full-time in fire arson investigation as Chief of the State of Ohio Fire Marshal's Fire-Explosion Investigation Bureau. He was also the curriculum manager/lead instructor for the Ohio Fire Academy Fire Investigation programs. He retired in 2014 after 32 years of public fire and law enforcement work to join Rimkus Consulting Group as a forensic fire and explosion investigator. Mr. Spradlin currently serves as a reserve Deputy Sheriff in Greene County, Ohio and as a volunteer fire training officer with the Xenia Township, Ohio Fire Dept. He also teaches at the Clark State Community College, the Sinclair Community College Criminal Justice Training Academy, and the Greene County Career Center Basic Police Academy. As a Certified Equine Specialist and owner/trainer of trail horses for over 20 years, Mr. Spradlin has also consulted on incidents involving horses.

Contact Information

(614) 948-0551
wspradlin@rimkus.com

921 Eastwind Drive,
Suite 110
Westerville, OH 43081

Professional Engagements

- Fire, Arson and Explosion Investigations
 - Fire Arson Investigation Bureau – Ohio (2008 – 2014), As Chief of the State Fire Marshal’s Office, responsible for the multi-agency operation networking and cooperative investigation efforts with the Ohio Division of Homeland Security, Bureau of Criminal Investigation, Ohio State Patrol, Federal Bureau of ATF and Ohio Dept. of Insurance.
 - Greene County Fire Investigator Task Force – Greene County, OH (1991 – 2007), Member of organization established to investigate growing number of suspicious fires in Greene County.
 - Fire Chief – Xenia Township, OH (1998 – 2008), Responded and managed all complex investigations such as high dollar loss, State Fire Marshal government facilities, multiple fatality fires, explosions, high risk search warrants and seizure of illegal explosives.
- Subject Matter Expert
 - Ohio Fire Academy – Reynoldsburg, OH (2008 – 2014), Lead instructor and curriculum manager for all fire investigation courses including Arson Detection for First Responders, Legal Issues for Fire Chiefs, Basic and Advanced Fire Investigation, Ohio Coroners Association training programs and Ohio Arson for Judges and Prosecutors seminars.
 - Sinclair Community College Criminal Justice Training Academy – Dayton, OH (2001 – present), Teaches terrorism and explosives, patrol, investigations, crisis intervention and fire safety
 - Greene County Career Center Basic Police Academy – Xenia, OH (2001 – present), Teaches terrorism and explosives, patrol, investigations, crisis intervention and fire safety.

Forensic Engagements

- Fire/Arson
 - Nationwide – Commercial and residential cause and origin investigation
 - Fire Protection System Analysis – Commercial and residential investigations
 - Vent and Exhaust Systems (e.g., for restaurants and commercial kitchens)
 - Smoke and Fire Alarms – Commercial and residential alarm system investigations.
 - Utilities, Electrical Wiring, Appliances
 - Smoke Detector Performance – Commercial and residential investigations throughout Ohio, West Virginia, Pennsylvania, Kentucky, Indiana and Michigan
 - Equine Investigations – Investigates fires and other incidents involving horses.

Professional Experience

- Rimkus Consulting Group, Inc. 2014 – Present
 - Fire Consultant – Fire Division
 - Conducts on scene investigation and analysis of fire and explosion incidents including origin and cause determination, analysis of fire detection and suppression systems, products and circumstances surrounding the initiation of the fire, and support to other engineering divisions within Rimkus Consulting Group. Responsible for development and presentation of continuing education training for claims

adjusters.

- Greene County Sheriff's Office 2017 – Present
 - Reserve Deputy Sheriff
Sworn law enforcement officer, reserve volunteer, responsible for road patrol, training instructor, response to emergency calls, assist the fire investigation task force.
- Xenia Township Fire Dept. 2013 – 2018
 - Firefighter/Fire Investigator
Volunteer firefighter-EMT responsible for fire suppression, rescue, fire investigation, fire apparatus driver operator and fire training instructor.
- Village of Yellow Springs Police Dept. 2014 – 2017
 - Police Officer (part-time)
Responsible for patrol response to emergency, criminal investigations, and assist with training programs.
- State of Ohio Fire Marshall's Office 2008 – 2014
 - Chief – Fire-Explosion Investigations Bureau
Responsible for investigation of fires, criminal investigation of arson, explosions, bombings and illegal fireworks, including arrest and prosecution throughout Ohio. Personally responded and managed all complex investigations such as high dollar loss, government facilities, multiple fatality fires, explosions, high risk search warrants and seizure of illegal explosives. Responsible for networking and cooperative investigation efforts building teamwork with the Ohio Division of Homeland Security, Bureau of Criminal Investigation, Ohio State Patrol, Federal Bureau of ATF and Ohio Department of Insurance.
- Xenia Township Fire Dept. 1998 – 2008
 - Fire Chief
Responsible for command and administration of 50-member combination staffed fire, rescue and emergency medical services agency, with two stations and fleet of 12 apparatus. Certified as a firefighter, paramedic, fire inspector and fire instructor. Responsible for origin and cause of all fires within the jurisdiction, member of the Greene County Fire Investigator Task Force. Managed human resources and public relations, training, fleet management and policy development. Served as a captain, deputy fire chief and as the fire chief.
- City of Xenia Fire Division 1982 – 1998
 - Lieutenant/Paramedic
Responsible for the response to all emergencies occurring within the city on a 24-hour duty shift; fire suppression, rescue, medical calls, fire safety inspections and fire cause investigations. Certified as a firefighter, paramedic, fire inspector and fire instructor. Performed duties as firefighter, paramedic, company officer, supervisor, lieutenant, station commander, public relations and training manager.

- U.S. Air Force 1978 – 2008
 - First Sergeant, 445th Security Police Squadron
Responsible as the senior non-commissioned officer for a squadron of 100 security police personnel, morale, welfare and discipline, managed human resources, awards and decorations programs and training programs. Deployed to Operation Iraqi Freedom in 2007, combat veteran. Served active duty 1978 – 1982 and reserve status 1982 – 2008 at Wright Patterson AFB, Ohio.
 - First Sergeant, 445th Civil Engineer Squadron
Responsible as the senior non-commissioned officer for a squadron of 130 combat civil engineer personnel, including morale, welfare and discipline, managed human resources, awards and decorations programs and training programs. Deployed to Operation Enduring Freedom in 2002, combat veteran. Served active duty 1978 – 1982 and reserve status 1982 – 2008 at Wright Patterson AFB, Ohio.
 - Master Sergeant, 445th Civil Engineer Squadron
Responsible as the deputy fire chief for the Crash Fire Rescue unit assigned to the Engineering Squadron, manage training and readiness, deployment to world conflicts, command emergencies, conduct aircraft crash rescue, conduct structural fire suppression, investigate origin and cause of fires. Served active duty 1978-1982 and reserve status 1982 – 2008 at Wright Patterson AFB, Ohio.
- Greene County Sheriff's Office 1998 – 2013
 - Reserve Deputy Sheriff
Sworn law enforcement officer, reserve volunteer, responsible for road patrol, training instructor, response to emergency calls, tactical medic for the SWAT team, assist the fire investigation task force.

Education and Certifications

- Fire Science Technology, A.A.: Air University CCAF (1996)
- Human Resource Management, A.A.: Air University CCAF (1998)
- Organizational Management, B.S.: Wilberforce University (2008)
- Certified Fire Investigator (CFI): International Association of Arson Investigators
- Certified Fire Explosion Investigator (CFEI): National Association of Fire Investigators
- Certified Vehicle Fire Investigator (CFI(V)): National Association of Fire Investigators
- Certified Equine Specialist: Equine Assisted Growth and Learning Association (EAGALA)

Continuing Education

- Coursework: IAAI International Training Conference, 32 hours (2017); NFPA 921 (2017) update seminar, 8 hours (2017); Bombing Behavior Analysis, SOFAIA, 8 hours (2016); NFPA 921/1033 Report Writing, 8 hours (2015); Arson 360 Seminar, Ohio IAAI, 7 hours (2015)
- Executive Management: Interview, Interrogation and Courtroom Testimony, National Fire Academy Arson; Executive Analysis of Fire Operations in Emergency Management: National Fire Academy, Executive

Development Program, National Fire Academy; Executive Planning Program, National Fire Academy; Basic Fire Investigation and Advanced Fire Investigation, Ohio Fire Academy; USAFR Senior NCO Leadership Development Course, Sinclair Community College Criminal Justice Academy



Rimkus Consulting Group, Inc.
7501 South Quincy Street, Suite 160
Willowbrook, IL 60527
(866) 746-5871 Telephone
(630) 321-1847 Facsimile

March 3, 2017

Re: RCG File No:

	50904388
LLV Number:	4309638
VMF Location:	2001 North Mattis Avenue in Champaign, Illinois
Subject	Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 4309638, VIN 1GBCS1044R2915617. The vehicle was examined at the USPS Champaign Vehicle Maintenance Facility located at 2001 North Mattis Avenue in Champaign, Illinois. The fire incident reportedly occurred at 849 Walnut Street in Manteno, Illinois on January 9, 2017.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on January 24, 2017. Our work to complete this assignment was performed by Fire Consultant David A. Mager, IAAI-CFI. This report and case was reviewed by Technical Fire Manager Jack R. Kennedy, III, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusion

1. The fire was determined to have originated in the operator compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the headlamp switch positioned in the left side of the dashboard.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. Severe fire damage was observed at the driver's side windshield and the operator compartment. Total mass loss was observed to the windshield and dashboard on the driver's side of the vehicle. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage to the passenger compartment and smoke staining to the cargo area. Minor fire damage was observed in the cargo area. The most severe fire damage and mass loss was observed to the dashboard area, firewall, and steering wheel assembly. An analysis of the observable fire patterns indicated that the fire originated in this area at or around the headlamp switch positioned in the left side of the dashboard.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L gasoline engine. No fire damage was observed within the engine compartment. The fuel filter system was the GM model. The involved LLV was not equipped with a High Energy Ignition (HEI) distributor.

The battery for the vehicle was located at the front right side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be undamaged and intact; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact.

Fuse Panel Inspection:

Examination of the fuse panel revealed minor fire damage to the panel and all of the fuses. We observed melting to the conductor jumpers into fuses for the turn signals/back up lights and the instrument panel lights.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the passenger compartment at the left side of the instrument panel at the headlamp switch.

Contributing Factors:

The LLV reportedly was being driven at the time of the fire. The headlamps were in the "on" position per policy. A failure of the rheostat switch caused it to heat and ignited surrounding combustible materials.

Evidence Collected:

No evidence was collected for laboratory examination.

Interviews:

In a phone interview with the carrier stated that she smelled smoke but thought it was a normal smell from using the heat for the first time. Ms. stated that the smell did not go away after approximately 10 minutes so she called her supervisor. Ms. stated that she observed smoke near the windshield. Ms. stated she saw the interior lights flicker so she attempted to turn them off with the headlamp switch. Ms. stated that when she turned the headlamp switch, the switch caught on fire and flames were visible from the switch. Ms. stated that she had been driving the vehicle for about six months without any issues.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no indications of recent service or repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Mager

David A. Mager, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 3, 2017
RCG File No. 50904388

Photograph 1

1994 Chevrolet LLV 4309638, VIN 1GBCS1044R2915617.



Photograph 2

Fire damage to right side of passenger compartment.



Photograph 3

Insulation intact on electrical conductors right side of dashboard.



Photograph 4

Fire damage to headlamp switch and lack of insulation on conductors.



March 3, 2017
RCG File No. 50904388

Photograph 5
Damage to headlamp switch.



Photograph 6
Overall view of engine.



March 3, 2017
RCG File No. 50904388

CVs



DAVID A. MAGER, CFI FIRE CONSULTANT

Mr. Mager is an International Association of Arson Investigators Certified Fire Investigator, Illinois State Fire Marshall Office Certified Fire Investigator, Certified Fire Officer II, Hazardous Materials Technician "B" and a Illinois Department of Public Health Certified Paramedic.

Mr. Mager has an extensive professional background in the areas of firefighting and fire investigations, and has investigated over five hundred fires. His professional experience includes fire and explosion investigations, fire protection and detection system inspections as well as hazardous materials mitigations.

As an International Association of Arson Investigators Certified Instructor and a Certified Instructor II through the Illinois State Fire Marshall Office, Mr. Mager has conducted numerous live fire training exercises for Fire Fighters and Fire Investigators using authentic room furnishings as well as classes on fire behavior and evidence preservation.

Mr. Mager is a Retired Deputy Fire Chief and had been the Training Officer with the Midlothian, IL. Fire Department. He was an Assistant Team Leader for the Southwest Hazardous Materials Response Team and routinely responded to fire and hazardous materials incidents, fire investigations and conducted life safety inspections within the municipality.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator - Illinois State Fire Marshall Office
Certified Fire Investigator - International Association of Arson Investigators
Certified Instructor – International Association of Arson Investigators
Certified Fire Officer II – Illinois State Fire Marshall Office
Certified Hazardous Materials Technician "B" - Illinois State Fire Marshall Office
Certified Fire Department Incident Safety Officer – Illinois State Fire Marshall Office
International Association of Arson Investigators – Member
International Association of Arson Investigators (Illinois Chapter) – Member

EMPLOYMENT HISTORY

2008 – Present	Rimkus Consulting Group, Inc.
1987 – 2015	Midlothian Fire Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
7851 Woodland Center Boulevard
Tampa, Florida 33614
(800) 498-3060 Telephone
(813) 289-5440 Facsimile
Certificate of Authorization No. 8301

February 23, 2018

Re: RCG File No: 41118880
LLV Number: 4309660
VMF Location: 2800 Lakeland Hills Boulevard Lakeland, Florida 33805
Subject: Preliminary/Final Report

Dear

On December 12, 2017, a fire occurred in a US Postal Service vehicle near the intersection of State Road 54 and Eiland Boulevard, near the Lake Bernadette subdivision entrance in Zephyrhills, Florida.

Rimkus Consulting Group, Inc. was retained to examine LLV 4309660, VIN 1GBCS1041R2915753. During our investigation, we conducted an examination of the fire damaged LLV, conducted an interview with the carrier/driver and documented the vehicle with digital photographs. In the course of our work, the vehicle examination was conducted by Fire Consultant William T. Schorn, IAAI-CFI (V) on February 5, 2018 at the Lakeland VMF. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be along the mail side of the engine compartment.

3. The specific ignition sequence and cause of the fire could not be conclusively determined without additional destructive testing of the engine.

Observations

Exterior Inspection:

Examination of the vehicle began at the rear of the LLV and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Smoke and heat damage was observed along the upper portion of the mail side door and the window glass was missing. The hood and the bulkhead had been partially consumed during the fire progression and the windshield glass had been consumed. The driver side fender sustained moderate smoke and heat damage. The driver's door sustained moderate smoke and heat damage and the window glass was missing. The LLV had matching wheels and tires.

Interior Inspection:

Examination of the interior of the LLV revealed the fire had communicated into the operator's compartment via the bulkhead during the fire development. The mail side of the compartment sustained more severe damage compared to the driver's side with the dashboard being consumed along the mail side of the vehicle. The cargo compartment sustained only smoke and soot damage and no active fire damage.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated along the mail side of the engine compartment. We observed all of the combustible material along the mail side of the engine had been consumed. The LLV was equipped with a 2.2L engine and was fuel injected with a standard coil. We were able to detect acceptable levels of both oil and transmission fluid. The battery sustained moderate fire damage.

Undercarriage Inspection:

Examination of the undercarriage revealed fall down from the engine compartment. The LLV was mounted on the GM frame and was undamaged. The fuel lines were examined and undamaged by the fire. The fuel tank was examined and the vehicle fuel filter system was equipped with a GM filter. Both were free of fire damage. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained moderate fire damage.

Area of Fire Origin:

The area of fire origin was determined to be along the mail side of the engine compartment. Severe fire damage was observed and no obvious signs of failure were observed. Additional destructive testing by an engineer of the engine would be needed to determine the exact cause of the fire.

Contributing Factors:

The involved LLV had been turned into the VMF as it was stalling prior to fire.

Evidence Collected:

No evidence was collected during the inspection.

Interviews:

The carrier was interviewed on February 6, 2018. He said he routinely uses his personal vehicle for deliveries and on the day of the incident, he completed his route. As it was very busy because of the Christmas season, he decided to assist by completing another route (Route 31). He said there were no vehicles available, but he saw LLV 4309660 parked at the station. He saw the LLV had been turned in for stalling, but decided to take the vehicle to complete the route. He estimated he started to operate the vehicle around 4:30 P.M. and drove it to around until 7:00 P.M. He said he had never operated the vehicle before. He said the vehicle stalled, but he was able to re-start it. When it stalled, he called dispatch and requested someone respond to pick him up.

After he was able to re-start the vehicle, he drove a short distance when heard a loud bang noise from the engine compartment. He said he started to smell oil and the passenger compartment started to fill up with smoke. He said he immediately pulled the vehicle over and upon opening the door, the smoke started to dissipate quickly. The other carrier arrived a short time later and he collected his belongings and got into the other carriers vehicle. After one minute, he realized he forgot something in his vehicle and they turned around. He said they were only a short distance away when he observed the LLV on fire. He said the fire was burning through the center of the hood.

Service Records:

A review of the provided service records for the involved LLV was conducted. According to maintenance records the engine and transmission had been replaced in December of 2017 with the last maintenance being completed in January of 2018 with the oil pressure switch and turn signal being replaced.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Schorn

William T. Schorn, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

February 23, 2018
RCG File No. 41118880

Photograph 1

A view of the rear and mail side of the LLV.



Photograph 2

A view of the front of the LLV.



Photograph 3

A view of the driver side of the LLV.



Photograph 4

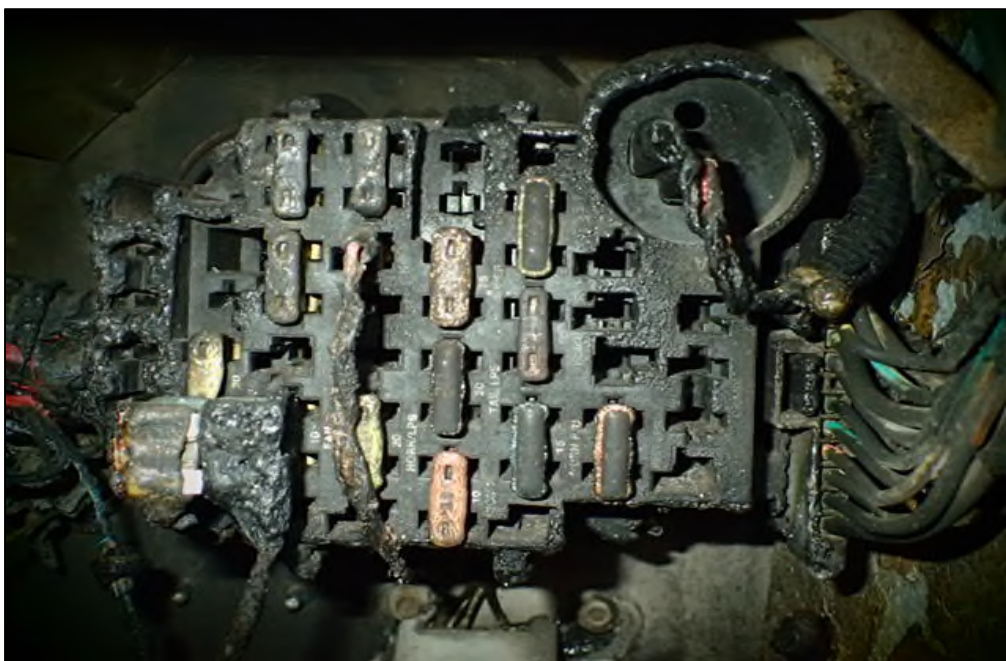
A view of the operator's compartment of the vehicle.



February 23, 2018
RCG File No. 41118880

Photograph 5

A view of the fuse panel.



Photograph 6

A view of the fire damaged engine compartment.



February 23, 2018
RCG File No. 41118880

CVs



**WILLIAM SCHORN, I.A.A.I., C.F.I., C.F.E.I., C.V.F.I.
FIRE CONSULTANT**

Mr. Schorn attended the University of South Florida majoring in Criminal Justice. Mr. Schorn's professional career includes over 30 years with the St. Petersburg Police Department. During his tenure with the police department, he was a Patrolman, Field Training Officer, Surveillance Detective, and Auto Theft Detective. For his last 19 years, he was assigned to the fire department to conduct fire investigations. In addition to the latent investigation, he also conducted the origin and cause investigations. Mr. Schorn was also the lead fire investigator for the City of St. Petersburg from 2006 until his retirement.

Mr. Schorn is a Certified Fire Investigator with the International Association of Arson Investigators, as well as a Certified Fire and Explosive Investigator and Certified Vehicle Fire Investigator with the National Association of Fire Investigators. He has been rendered an expert regarding fire investigations in criminal court. As the arson investigator assigned to the fire department, he assisted conducting the fire origin and cause investigation, as well as the criminal investigations. During the 19 years he was assigned to the fire department, he conducted approximately 1936 fire investigations. Since 2005, he has conducted approximately 493 origin and cause investigations, in which approximately 168 cases have been determined to be incendiary. Mr. Schorn also holds a private investigator license in the state of Florida (PI License number C1400618).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Law Enforcement Certification - Saint Petersburg Junior College (1984)
Criminal Justice – St. Pete College/University of South Florida (1980 -1984)
Professional Arson Co-Op of Florida
Florida Advisory Committee on Fire Prevention (FACAP)
International Association of Arson Investigators
International Association of Arson Investigators (FL Chapter)
National Association of Fire Investigators
Certified Fire and Explosive Investigator - National Association of Fire Investigators (2002)
Certified Fire Investigator - International Association of Arson Investigators (2009)
Certified Vehicle Fire Investigator (2013)

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1984 – 2015	Saint Petersburg Police Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1431 Greenway Drive, Suite 900
Irving, TX 75038
(877) 271-1168 Telephone
(972) 518-0011 Facsimile

Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2017

May 2, 2017

Re: RCG File No:

LLV Number:	02214563
VMF Location:	4310686
Subject:	936 West Walnut Street in Garland, Texas
	Preliminary/Final Report

Dear

On April 2, 2017, a fire occurred in a US Postal Service vehicle at Goliad Street and Interstate 30 in Rockwall, Texas. On April 12, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1994 Grumman LLV 4310686. On April 14, 2017, we conducted a fire origin and cause examination on the vehicle at US Postal Service Maintenance Facility located at 936 West Walnut Street in Garland, Texas.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Gary L. Cochran, IAAI-CFI. A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the vehicle.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of an engine fluid leak (i.e.: fuel, oil, transmission fluid) onto a hot engine surface as the possible cause of the fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed in the engine compartment and the mail compartment. Total mass loss was observed to the windshield, engine hood assembly, dashboard, and multiple engine components. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer which were Goodyear LT 195/75 R15. There was no evidence to indicate that the brakes, wheel assemblies, or axles had failed. The fuel cap was in place and secured.

The front of the vehicle had sustained severe fire damage. The cover for the engine compartment had been consumed by the fire. The bulkhead between the engine compartment and the mail compartment had also been consumed. Severe fire damage was observed to the left, mail side of the vehicle. The left front fender had been consumed. The left side mail door and aluminum frame had partially melted. Severe fire damage was also observed to the upper portion of the cargo area. The rear rolling door had sustained fire and heat damage. The right, driver's side sustained fire and heat damage to the driver's door in the area of the window. The right front fender sustained fire and heat damage to the upper portion. The front area of the aluminum roof of the vehicle had melted as the result of thermal exposure from the fire.

The exhaust system was undamaged by the fire. The rear wheels, brakes, brake lines, and tires were undamaged. The right front tire, wheel, brake, and brake line had sustained minor fire damage. The left tire sustained severe fire damage and mass loss. The brakes, brake lines, and wheels sustained severe fire damage and mass loss. The rear axle was not leaking or damaged. The transmission was undamaged. The fuel

lines were intact along the left frame. The flexible fuel lines at the cross over to the right side above the transmission had sustained severe fire damage.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage throughout. All combustible seating material had been consumed, exposing the metal seat frame. The steering column and brake pedal assembly had been severely fire damaged. The mail tray had collapsed and partially melted. Numerous packages of paper products remained with charring around the edges. The rear cargo area sustained fire, heat and smoke damage throughout. The left side panel sustained fire and heat damage. The front bulkhead had been consumed. The fuse block located on the right side of the driver's compartment had fallen into the engine compartment and was too severely damaged by the fire to be evaluated. There was no evidence of adverse electrical activity. The ignition was too severely damaged to be evaluated. The heater fan was not present in the debris and coil was found on the ground beneath the front-left tire. The wiring harness was examined and no evidence of adverse electrical activity was observed.

The most severe fire damage was observed at the bulkhead, dashboard, windshield, and steering column. The burn patterns observed to the interior area progressed upward and outward from the engine compartment. After a review of the progression of the burn patterns it was determined the fire progressed from the engine compartment into the mail compartment through the manufactured holes in the bulkhead and due to the failure of the windshield. We observed the ignition switch to be in the off position, and no key was present in the switch. Examination of the cargo compartment revealed heat and smoke damage with a small amount of fire damage at the slide door opening.

Engine Compartment Inspection:

Examination of the engine compartment revealed severe fire damage throughout the compartment. The vehicle was equipped with a GM 2.2L, four-cylinder gasoline engine. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the engine compartment. The engine compartment sustained fire, heat and smoke damage throughout. The damage was most severe on the left side of the engine compartment. The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been partially consumed. The melted remains of the fuse box from the mail compartment and the attached wiring harness were inspected. The wiring harness sustained fire and heat damage. The insulation had been consumed. The alternator sustained severe fire and heat damage. The insulation had been consumed from the conductors to the alternator. The main conductor was secure with no evidence of adverse electrical activity. The auxiliary conductor was secure. The top of the battery case had sustained fire and heat damage.

The conductors and terminals had become detached from the battery. The negative conductor was attached to the frame and to the block. The main positive conductor was attached to the starter. The insulation had been consumed but displayed no evidence of adverse electrical activity. The fuel rail had sustained severe fire damage. The injectors sustained severe damage but were intact. The fuel lines had sustained severe fire damage and mass loss.

The power steering unit positioned at the left front of the engine sustained fire damage. The flexible return line and reservoir had been consumed. The upper radiator hose sustained fire and heat damage. The flexible section of the vapor return line from the fuel tank to the canister mounted in the grill had been consumed. The canister had sustained fire and heat damage. The flexible section from the canister to the solenoid at the rear of the throttle body had been consumed. The starter was undamaged by the fire and the conductors were secure. The insulation had been consumed on the conductors routed across the engine from the battery to the starter.

Examination of the engine fluid level could not be determined, due to the oil stick being melted down inside the oil filler tube. Examination of the transmission fluid level revealed the transmission fluid was within factory recommendation limits.

Examination of the engine was conducted, and no cracks or holes were observed within the engine or engine block.

Examination of the left wheel and brakes was conducted and no problems were noted. We did observe that the outside brake pad had worn down, almost to the rotor, but was not a cause of the fire. We revealed that both brake lines were burned away, which would have been expected with this magnitude of fire.

Our examination revealed what appeared to be a metal air filter canister that had been disconnected from inside the left wall of the engine compartment. The metal canister was severely damaged by fire and may have also been damaged by some type of internal explosion. The prior location of the canister was confirmed of its place before the fire by an exemplar LLV which was on the lot.

Undercarriage Inspection:

We examined the undercarriage of the vehicle, which revealed no fire damage to the undercarriage, except at the very front of the engine compartment. The vehicle's fuel system was intact to the tank, with the fuel filter mounted on the frame, near the rear of the vehicle. The involved LLV was mounted on a GM frame. The fuel lines were positioned within the open frame routed to the front of the vehicle. The vehicle was equipped with a GM fuel filter system.

Fuse Panel Inspection:

Examination of the fuse panel revealed severe fire damage to the panel and wiring insulation and only the wiring conductors were present during our examination. Examination of the conductors and fittings did not reveal any adverse electrical activity on any of the conductors.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated within the engine compartment of the vehicle. The area of origin was determined to be on the left side of the engine. The specific point of origin could not be conclusively identified due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination. We could not eliminate the possibility of an engine fluid leak (i.e.: fuel, oil, power steering fluid, transmission fluid, etc.) onto a hot engine surface as the possible cause of the fire.

Raw fuel vapors may have collected inside the metal air filter, most probably after the vehicle was filled up with fuel during the route. One possible ignition factor could have been at some point during the route the vapors may have come in contact with a high heat source, possibly heat from the exhaust manifold, located directly below the air filter plastic tube causing the fuel vapors to ignite and explode. Another possible ignition source could have been the filter had collected fuel vapors and the vehicle backfired causing the fuel vapors to ignite.

Evidence Collected:

A laboratory analysis was conducted on May 1, 2017, by Forensic Division Manager Mark H. Nelson, P.E. and Technical Fire Manager David R. Meyers, IAAI-CFI of the collected metal housing and components of the air filter system. The metal housing and air filter system collected from the vehicle was observed with severe fire damage and oxidation to the remaining metal components. The metal housing projected outward from the internal air filter area. All combustible materials within the housing were consumed by the fire and were unable to be examined. Due to the severe fire damage and lack of remaining physical evidence, the exam of the air filter system was inconclusive.

Interviews:

Our interview with Mr. was conducted via telephone, and he stated that he had been on his route for about 6 or 7 hours that day, and had no problems with the LLV, until the fire happened. There were no warning lights, no indicators of problems within the unit, and had actually been running pretty good all day. At the time of the incident, he started feeling the vehicle starting to shake, but it would go away, and then come back. He stated that all of a sudden, he heard a very loud bang that shook the vehicle, and immediately stalled the vehicle. He was able to pull the vehicle off the road to a safe area, then saw smoke coming from the engine compartment.

The fire was reported at 5:24 P.M. on April 2, 2017, at Goliad and Interstate 30 in Rockwall, Texas. The Rockwall Fire Department responded and extinguished the fire. We have requested a Rockwall Fire Incident Report, when and if received it will be forwarded as a separate page.

He said the smoke dissipated, and then came back as well as a fire under the engine hood. He called his supervisor before the fire erupted to report the problem with the vehicle. Once the fire started, it was growing very rapidly and spreading. He called 911.

Service Records:

A review of the service records provided for the involved LLV did not reveal any recent repairs or work that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gary L. Cochran

Gary L. Cochran, IAA-CFI
Fire Consultant

David R. Meyers

David R. Meyers
Technical Fire Manager

Attachments: Photographs, CVs

May 2, 2017
RCG File No. 02214563

Photograph 1

View of front of LLV, Arrow indicates area of origin.



Photograph 2

Right side of LLV, observe the severe fire damage to the front left side.



May 2, 2017
RCG File No. 02214563

Photograph 3

Left and rear side of LLV.



Photograph 4

The engine compartment, observe the severe fire damage to the left side and total mass loss to the combustible components of the compartment.



May 2, 2017
RCG File No. 02214563

Photograph 5

View of fire damage to driver side of operator compartment, and rear of engine compartment.



Photograph 6

View of undercarriage and fuel system. Fuel filter on the right frame.



Photograph 7

View of damaged metal air filter, being placed as close to its original place before the fire, on front left engine compartment.



Photograph 8

The remains of the metal housing and air filter system, observe the outward progression of the metal housing unit.



May 2, 2017
RCG File No. 02214563

CVs



**GARY L. COCHRAN, IAAI-CFI, NAFI-CFEI & CVFI
FIRE CONSULTANT**

Mr. Cochran has more than 30 years of experience in fire service. He has actively served as a Fire Investigator for two separate municipalities, and has served as an active member of the Tarrant County Fire/Arson Investigator's Association and most recently with the Grapevine Fire Department, Texas, as the Fire Code Enforcement Officer and Fire Investigator. He was also the Fire Code Enforcement Officer and Fire Investigator for the Town of Westlake, Texas. Mr. Cochran has extensive training in fire and criminal investigations, as well as hazardous material, nuclear, chemical, and biological and EMS incidents. He is certified through the International Association of Arson Investigators as a Certified Fire Investigator (IAAI-CFI) as well as the National Association of Fire Investigator as a Certified Fire and Explosion Investigator (NAFI-CFEI) and Certified Vehicle Fire Investigator (NAFI-CVFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Fire Protection Technology, Tarrant County College
Fire Service Administration, Weatherford College
Occupational Safety & Health, A.A.S., Columbia Southern University
International Association of Arson Investigators (IAAI), Texas Chapter, 2007 - Present
International Association of Arson Investigators (IAAI), 2007 - Present
International Association of Fire Fighters (IAFF)
National Association of Fire Investigators (NAFI), 2005 - Present
Texas Firefighters Association, 1987 - Present
Tarrant County Fire and Arson Investigators Association (TCFAIA), 2005 - Present
North Texas Fire Investigators Association (NTFIA), 2008 - Present

SPECIALIZED EDUCATION

Complex Arson Investigation Techniques for the Insurance Industry (IAAI) 2014
A.A.S. - Occupational Safety & Health, Columbia Southern University 2012
Texas IAAI Arson Conference, Austin, TX 2012
Pate Hands-On Vehicle Fires – Tested 2012
CVFI (NAFI) - Tested 2012
Texas IAAI Arson Conference, Austin, TX 2011
NFA – Forensic Evidence Collection, Emmitsburg, MD 2011
South Texas Arson Conference, South Padre, TX 2010
NFA – Fire/Arson Origin and Cause Investigations, Emmitsburg, MD 2010
NFA 25–Inspections, Testing and Maintenance of Water Based Fire Protection Systems, Houston, TX 2010
NFPA 72 - Inspections Testing and Maintenance of Fire Alarms, Houston, TX 2010
East Texas Arson Seminar, Longview, TX 2009
Certified Fire Investigator (IAAI-CFI) Tested 2009
Legal Aspect of Fire Investigations, North Richland Hills, TX 2009
East Texas Arson Seminar, Longview, TX 2008
NFA – Developing Fire & Life Safety Strategies, Emmitsburg, MD 2008
NFA – Plans review for Inspectors, Emmitsburg, MD 2007
TCLEOSE Basic Police Officer 2007
Intermediate Fire/Arson Investigator 2007
Intermediate Fire Inspector 2007
IAAI Texas Chapter Arson Seminar, Austin, TX 2007
TEEX – Courtroom Preparation for First Responders, Benbrook, TX 2006
Certified Fire and Explosion Investigator (NAFI-CFEI) Tested 2006
Advanced Firefighter 2005
Juvenile Fire Setter Intervention Specialist I & II Tested 2005
IAAI Texas Chapter Arson Seminar, Austin, TX 2005
Hazardous Material Technician School, Dallas, TX 2000
Paramedic School, Hurst, TX 1985
Basic Firefighter School, Bedford, TX 1983



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
15311 NE 90th Street
Redmond, WA 98052
(877) 677-6157 Telephone
(425) 629-1799 Facsimile

January 18, 2017

Re: RCG File No:

LLV Number: 76102063
VMF Location: 4310846
6821 208th Street SW in Lynnwood, Washington
Subject: Preliminary/Final Report

Dear

On November 30, 2016 a USPS LLV was involved in a fire while traveling on Mutiny Bay Road in Freeland, Washington. Rimkus Consulting Group, Inc. was retained to examine LLV 4310846, VIN 1GBCS1041R2916739.

In the course of our work, we examined the involved LLV, documented and photographed the remaining physical evidence, reviewed service records and conducted interviews. The examination of the involved LLV was conducted at the VMF located at 6821 208th Street SW in Lynnwood, Washington on December 15, 2016, by Ted J. Hickey, IAAI-CFI. This report was reviewed by Jack Kennedy, III IAAI-CFI, CFEI, CVFI IAAI C.F.I., Eastern Region Fire Division Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the mail side of the engine compartment and extended through the fire wall into the operator compartment.

3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the fire damage and the lack of remaining conclusive physical evidence associated with the ignition source.

Observations

Exterior Inspection:

We observed the front of the vehicle sustained fire and heat damage extending from the grill area and indicating slightly more damage to the side of the vehicle opposite the driver.

The driver's side front fender was free of paint due to thermal damage from the side marker light to the edge of the hood and even with the perpendicular line of the hood running across the vehicle. We observed the slider door on the driver's side was damaged on the upper right. We observed the window in this door was destroyed by thermal damage. We observed the top left portion of the body where it meets the door had smoke and heat staining emanating towards the rear of the vehicle.

We observed the rear of the vehicle which was intact with the exception of melted door seal rubber draping down from the top edge of the door.

We observed the front section of the side opposite the driver had severe thermal damage that ran approximately parallel to a point approximately 4-inches above the wheel well. We observed the fender above this area had been consumed by the fire. Approximately three quarters of the hood was consumed. We observed most of the front frame around the windows and the majority of the roof above the passenger area was consumed and missing.

An analysis of the fire damage and patterns observed on the exterior of the LLV indicated that the fire originated in the engine compartment.

Interior Inspection:

The interior operator compartment of the involved LLV was severely fire damaged. The fire wall on the side opposite the driver was consumed and the area was open to the engine compartment. We observed the fire wall existed from the brake vacuum booster pump to the driver's side, an area of approximately 1 foot. We observed all electrical components in the dash were severely damaged and most of the interior structure of the dash was consumed. An examination of the remaining electrical conductors was conducted and we did not identify any obvious physical evidence of adverse electrical activity that would have caused or contributed to the cause of the fire.

Engine Compartment Inspection:

The engine compartment sustained severe fire and heat damage. An analysis of the fire patterns and remaining physical evidence indicated that the fire originated on the mail side of the engine compartment at the rear near the fire wall. Fire had extended from the engine compartment through the fire wall into the operator compartment. Combustible components and hoses in this area had been consumed by fire. Electrical conductors routed through this area had been severely damaged. The LLV was equipped with a High Energy Ignition (HEI) distributor. The area of origin contained multiple potential ignition sources; however, there were no conclusive indicators as to the ignition source or the first material ignited.

Undercarriage Inspection:

The LLV was brought into the maintenance facility and placed on a lift. We examined the undercarriage and it appeared damaged, but we observed burn patterns and damage that indicated the origin of the fire was above the underside of the vehicle. We examined the starter was examined and each of the wiring connections were present. Thermal damage occurred to the electrical conductors but there was still insulation present on the wires until they reached up in to the upper engine compartment where they were cleaned by thermal energy. The involved LLV was mounted on a GM frame. The LLV was equipped with a GM fuel filter system.

Fuse Panel Inspection:

The fuse panel was consumed by fire and heat, and the position of the fuses could not be determined.

Area of Fire Origin:

We observed the area of origin occurred on the passenger side (or mail tray side) in the engine compartment, close to the fire wall. We observed this area had the most amount of damage. Thermal patterns emanated from the area and pointed to this area.

Contributing Factors:

Due to the severity of the damage and lack of remaining physical evidence, contributing factors could not be conclusively identified.

Evidence Collected:

There was no physical evidence collected from the involved LLV for examination.

Interviews:

On December 14, 2016, we contacted the Lynnwood VMF and spoke with the maintenance supervisor to schedule the inspection. We had an opportunity to speak with the carrier. Mr. stated he had used the vehicle all day on his route and was just finishing up. He hadn't experienced any problems with the vehicle at all that day. He pulled up to a bank of mail boxes and smelled electrical smoke. He noticed sparks and then flames coming from the front of the vehicle. He stated he saw the first flames from the front of the vehicle on the mail side. He immediately shut the vehicle off and exited. The fire quickly grew until the fire department came and extinguished it. He did not report any operational issues prior to the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. The last PM on the LLV prior to the fire was conducted on October 3, 2016. There were no entries or indications of any recent work that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Ted J. Hickey

Ted J. Hickey, C.F.I

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI

Attachments: Photographs, CVs

January 18, 2017
RCG File No. 76102063

Photograph 1

Thermal damage to the vehicle on the side opposite the driver.



Photograph 2

Thermal damage to the engine compartment.



January 18, 2017
RCG File No. 76102063

Photograph 3

View of the starter and conductors.



Photograph 4

General area of fire origin.



January 18, 2017
RCG File No. 76102063

CVs



TED J. HICKEY, CFI FIRE CONSULTANT

Mr. Hickey is a graduate from Columbia Southern University with an Associate of Applied Sciences Degree in Fire Science. He is a Certified Fire Investigator (C.F.I.) through the International Fire Service Accreditation Committee (I.F.S.A.C.). Ted is an International Code Council Certified Fire Code Inspector I and II. He has completed numerous educational seminars and continuing education courses. Ted has experience in fire origin and cause investigations, researching fire codes and training and evaluating fire investigators. He has conducted fire and explosion investigations that include commercial, residential, and automotive property.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S. Fire Science

Columbia Southern University – 2010

Certified Fire Investigator (C.F.I.) International Fire Service Accreditation Congress – 2010

Certified Fire Inspector II – International Code Council

January 2005 – Certification Number: 5098551

Member:

International Association of Arson Investigators – IAAI

International Association of Arson Investigators – IAAI Washington Chapter

National Association of Fire Investigators – NAFI

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2000 – 2015	Renton of Renton WA - Fire Inspector/Investigator
1986 – 1999	City of Renton Washington - Firefighter
1983 – 1986	City of Edmonds WA - Firefighter

DETAILED PROFESSIONAL EXPERIENCE:

RIMKUS CONSULTING GROUP, INC.

2015 – PRESENT

Fire Consultant

Conduct fire, arson, and explosion investigations including residential, commercial, marine and automobile losses for insurance companies and law firms. Collect and preserve evidence through precise documentation to ensure chain of custody. Conduct interviews with witnesses, responding firefighters, state fire marshal agencies, and other pertinent third party organizations. Prepare detailed, written investigative reports as to the final conclusions and opinions of the subject loss. Provide technical and scientific support to clients for subrogation and litigation purposes. Conduct code compliance research including electrical, gas, and installation code violations. Assist personnel with product design failure



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
7501 Quincy Street, Suite 160
Willowbrook, Illinois 60527
Telephone: (866) 746-5871
Certificate of Authorization No. 184005064
Certification Expiration Date April 30, 2019

July 9, 2019

Re: RCG File No: 100005600
LLV Number: 4310922
VMF Location: 1700 Emerson Street Evanston, Illinois
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 4310922, VIN 1GBCS1041R2916935. The vehicle was examined at the USPS Evanston Vehicle Maintenance Facility located at 1700 Emerson Street in Evanston, Illinois. The fire incident reportedly occurred at 1225 Shiloh Boulevard in Zion, Illinois on June 1, 2019, at 3:30 p.m.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on June 19, 2019. Our work to complete this assignment was performed by Fire Consultant David A. Mager, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The vehicle sustained no fire damage. Based upon observations and witness statements, it was determined that white smoke originated from the top side of the transmission.

2. Leaking transmission fluid contacting the hot exhaust pipe would create a large volume of white smoke.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. There was no visible fire damage to the exterior of the LLV. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured.

Interior Inspection:

There was no visible fire damage to the interior of the vehicle.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L, fuel injected with four fuel injectors. The vehicle had a standard ignition coil. The remains of the battery were located at the right front side of the engine compartment. The battery was intact and undamaged by fire. We examined the conductors from the battery and observed no visible electrical activity. We examined the starter and observed it to be intact with no adverse electrical activity. We examined the alternator and observed it to be intact with no adverse electrical activity. We observed no visible fire damage in the engine compartment.

Engine oil level was in the safe range and clean. The transmission fluid was low and contained debris on the end of the dipstick.

Undercarriage Inspection:

Examination of the undercarriage revealed no visible fire damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure up to where they entered the frame rail. The exhaust system was intact. We observed a significant amount of transmission fluid on the transmission pan and surrounding surfaces.

Fuse Panel Inspection:

The fuse panel was intact and undamaged by fire.

Area of Fire Origin:

We observed no indication of a fire. Leaking transmission fluid contacting the hot exhaust pipe would create a large volume of white smoke.

Potential Contributing Factors:

Leaking transmission fluid contacting a hot exhaust pipe.

Evidence Collected:

No evidence was collected.

Interview:

In an interview supervisor Mr. provided the following information:

- Carrier informed him that there was smoke coming from the vehicle.
- He grabbed a fire extinguisher and went out to the parking lot.
- Mr. stated that he observed an area approximately 5 X 6 inches on top of the transmission burning.
- He used the fire extinguisher to put the fire out.
- He described white smoke coming from the area around the back of the engine compartment.
- The fire department was not notified.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records it was determined there was service completed to change a "shaft and seal" for the transmission in March of 2019. A mechanical evaluation would need to be completed to determine if that work contributed to the leak.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to

determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Mager

David A. Mager, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1

Overall view of LLV 4310922.



Photograph 2

Overall view of engine compartment.



Photograph 3

Transmission fluid on pan and exhaust pipe.



Photograph 4

Debris on transmission dipstick .



Curriculum Vitae



David A. Mager, C.F.I. (V)

Fire Consultant
Fire Division

Background

Mr. Mager is an International Association of Arson Investigators Certified Fire Investigator, Illinois State Fire Marshall Office Certified Fire Investigator, Certified Fire Officer II, Hazardous Materials Technician "B" and was an Illinois Dept. of Public Health Certified Paramedic. He is also a Certified Private Investigator in Illinois, Indiana, Michigan, Ohio, Minnesota, Iowa, Missouri and Wisconsin.

Mr. Mager was a Deputy Chief and had been the Training Officer with the Midlothian Fire Department in Illinois. He was an Assistant Team Leader for the Southwest Hazardous Materials Response Team and routinely responded to fire and hazardous materials incidents, investigated fires and conducted life safety inspections within the municipality.

He has an extensive professional background in the areas of firefighting and fire investigations and has investigated over 1000 fires. His professional experience includes fire and explosion investigations, fire protection and detection system inspections as well as hazardous materials mitigations.

As an International Association of Arson Investigators Certified Instructor and a Certified Instructor II through the Illinois State Fire Marshall Office, Mr. Mager has conducted numerous live fire training exercises for firefighters and fire investigators using authentic room furnishings as well as classes on fire behavior and evidence preservation.

As a forensic investigator, he performs scene investigation and analysis of fire and explosion incidents including origin and cause determination, analysis of products and circumstances surrounding the initiation of the fire.

Contact Information

(630) 321-1846
damager@rimkus.com
7501 S. Quincy Street,
Suite 160
Willowbrook, IL 60527



Rimkus New York, PLLC
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, NJ 07631
(201) 368-8551 Telephone
(201) 368-8557 Facsimile
Certificate of Authorization No. 0010333

February 16, 2016

Re: RCG File No: 47808212
LLV Number: 4310948
VMF Location: 1335 Jefferson Road, Rochester, New York 14526
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 4310948 that occurred at 2527 Baird Road in Penfield, New York on December 8, 2015. In the course of our work, we examined and documented the fire-damaged vehicle and interviewed the carrier/operator on December 29, 2015.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility in Rochester, New York. The work to complete this assignment was performed by Fire Consultant Donald E. Berg, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the driver's side of the engine compartment in the area surrounding the fuel pressure regulator adjacent

to the engine block when observed from the front of the vehicle. The point of fire origin was where the fuel pressure regulator connected to the fuel rail.

3. The specific ignition sequence and cause of the fire was the direct result of fuel escaping from the loose connection under pressure which was atomized and the vapors were ignited on the hot surface of the operating engine.
4. Prior to the fire, it was reported that routine maintenance was performed to replace the number-2 fuel injector.

Observations

Exterior Inspection:

The exterior examination of the vehicle revealed evidence of soot, smoke, heat, and fire damage on the engine compartment hood. The remainder of the exterior of the vehicle was free from fire damage and intact.

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments, revealed minimal evidence of soot, smoke, heat or fire damage. The remains of fire extinguisher expellant were observed throughout the operator's compartment of the LLV and on the exterior front.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated on the driver's side of the engine compartment. The vehicle was equipped with a General Motors (GM) fuel filter. The battery was intact and exhibited heat and flame exposure to the upper surface. The battery connection cables were intact with some heat exposure to the insulation that exposed the copper conductors. The fluid levels were checked and appeared to be at normal operating levels. The electrical wiring within the engine compartment was damaged by heat and flame. There were no observed electrical anomalies or adverse electrical failures observed on any of the wires within the engine compartment.

Undercarriage Inspection:

Examination of the undercarriage revealed minimal evidence of soot, smoke, heat or fire damage. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

Examination of the fuse panel located within the operator's compartment revealed no evidence of soot, smoke, heat or fire damage. The fuse panel cover was not on at the time of the inspection. There were no failed (blown) fuses observed.

Area of Fire Origin:

The area of fire origin was determined to be on the driver's side of the engine compartment in the area surrounding the fuel pressure regulator adjacent to the engine block when observed from the front of the vehicle (**Photograph 2**).

The point of fire origin was where the fuel pressure regulator connected to the fuel rail. In order to confirm that the leak was from the fuel pressure regulator, compressed air was applied to the fuel line. When the air pressure was supplied to the fuel line, fuel remaining in the line escaped from the connection of the fuel pressure regulator to the fuel rail connection point (**Photograph 3**). The fuel regulator was more closely examined and upon closer inspection it was determined that the bolt used to secure the fuel pressure regulator to the fuel rail had failed (**Photograph 4**). The loose connection between the fuel rail and the fuel pressure regulator created an opening that allowed fuel to escape under pressure. Located directly below the fuel pressure regulator was the alternator which was most likely the source of ignition that ignited the vaporized fuel when the carrier/operator attempted to restart the vehicle.

The lowest fire damage observed was on the driver's side of the engine compartment where the ignition wires and fuel lines exhibited heat exposure and melting of the insulation. The ignition wires were located below the location of the fuel pressure regulator.

Contributing Factors:

Prior to the fire it was reported that routine maintenance was performed to replace the number-2 fuel injector. The fuel pressure regulator would have been removed at that time in order to gain access to the area being worked on. It is unknown at this time if the bolt holding the fuel pressure regulator in place was over-tightened by a technician causing it to crack, or if it simply failed over time as a result of normal wear.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interviews:

A telephone interview with the carrier/operator of the LLV, was conducted on December 30, 2015. He reported the following information.

- He was out on the road around 9:30 A.M.
- The fire occurred at 1:30 P.M.
- The vehicle had been in for repairs and was returned to him the night before the fire.
- The vehicle needed new tires.
- There were no mechanical issues.
- The vehicle stalled at a stop sign on the corner of 2527 Baird Road and Braeloch Crossing.
- He turned the key to the full "off" position and put the transmission in park.
- He restarted the vehicle and it burst into flames.
- He observed flames coming from the vents near the windshield.
- He called 911 from his cell phone.
- Emergency responders nearby used fire extinguishers to keep the fire at bay until the fire department arrived.
- The fire department extinguished the fire with water from the first arriving engine.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NEW YORK, PLLC

Donald E. Berg

Donald E. Berg, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

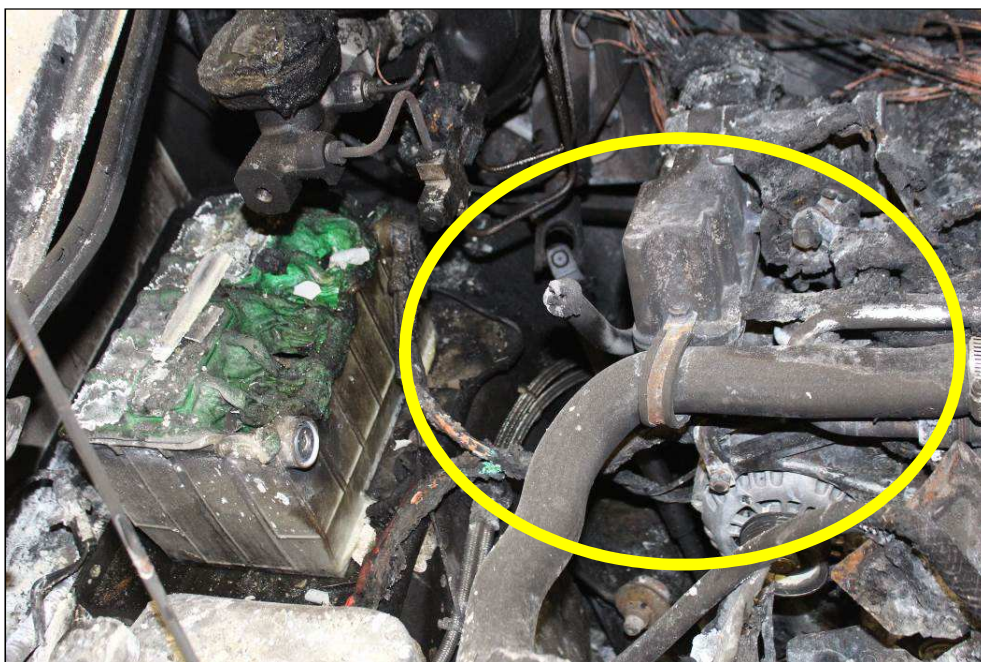
Attachments: Photographs, CVs

February 16, 2016
RCG File No. 47808212

Photograph 1
View of the fire damaged LLV.



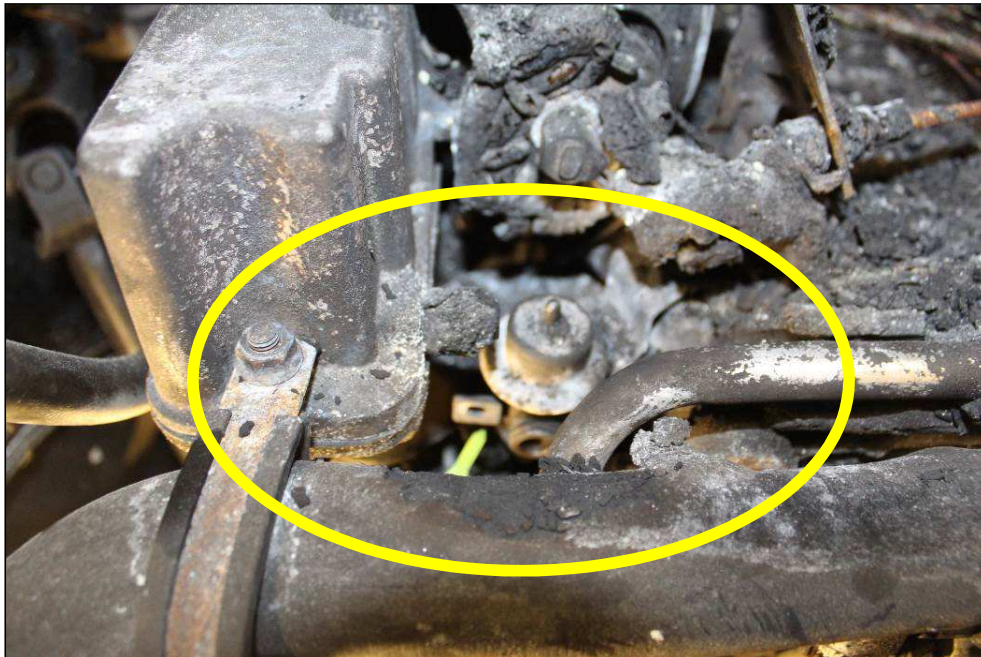
Photograph 2
View of the area of fire origin.



February 16, 2016
RCG File No. 47808212

Photograph 3

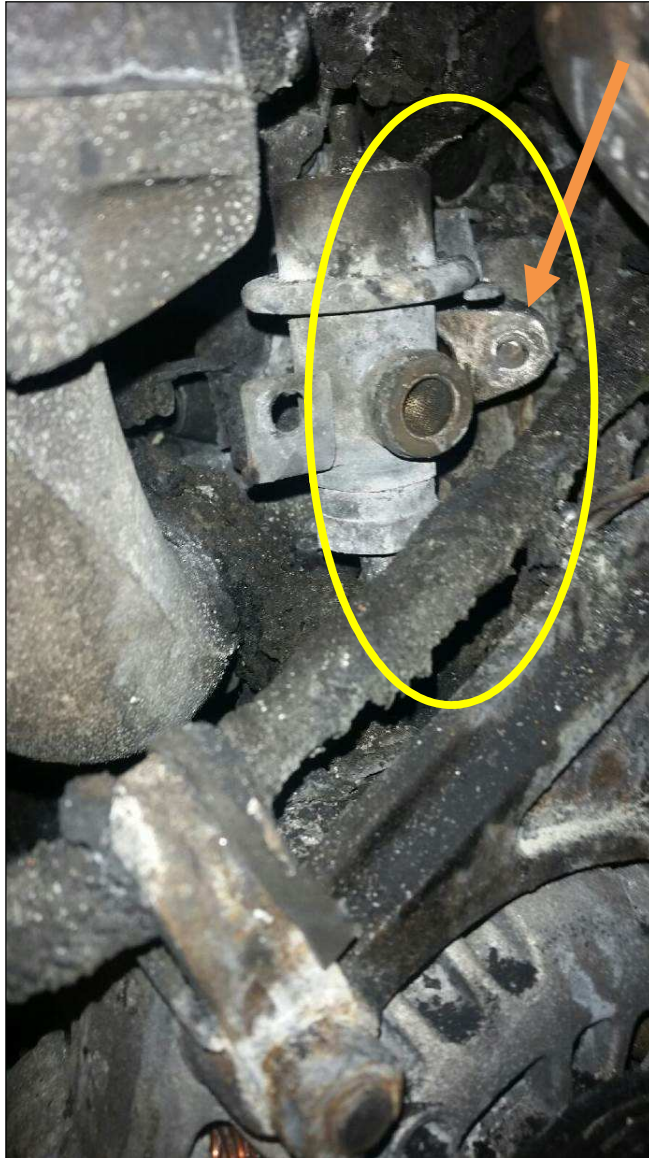
View of Fuel Pressure Regulator and location of open connection.



February 16, 2016
RCG File No. 47808212

Photograph 4

Rotated view of Fuel Pressure Regulator showing location of severed bolt.



February 16, 2016
RCG File No. 47808212

CVs



DONALD E. BERG, IAAI-CFI, CFEI, CFII FIRE CONSULTANT

Mr. Berg is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) with the National Association of Fire Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). Mr. Berg is a Licensed Private Investigator in the state of New York, New Jersey and Connecticut. He has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, marine, vehicles and heavy construction equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Berg has testified on numerous occasions involving the investigation of fires in New York and Connecticut.

Mr. Berg entered the field of fire service in 1981. His professional career includes thirty-three years of experience in fire suppression, building inspection, code enforcement, hazardous material, and fire and explosion investigations. He was an active member of the Connecticut Fire Marshals Association, New England Fire Marshals Association and a member of the Stamford Connecticut Arson Task Force. He served as a Deputy Fire Marshal and Fire Lieutenant in the City of Stamford Connecticut for more than twenty-eight years.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

State University of New York, Purchase, New York Bronze Sculpture, 1986
State of Connecticut, Meriden, Connecticut Fire Marshal Certification Program, 250 hours, 1982
Philadelphia College of Art Philadelphia, Pennsylvania Illustration, 1980
Rhode Island School of Design Providence, Rhode Island, Illustration, 1978

Certifications:

International Association of Arson Investigators - Certified Fire Investigator # 23-020138
National Association of Fire Investigators (NAFI) Certified Fire and Explosion Investigator (CFEI)
National Association of Fire Investigators (NAFI) Certified Fire and Explosion Investigator Instructor (CFII)
State of Connecticut Certified Fire Service Instructor
United States Coast Guard Aux ID # 1238260 FSO-HR SR1-12-08
United States Coast Guard Auxiliary Certified Vessel Examiner
United States Coast Guard Auxiliary Instructor
United States Coast Guard Auxiliary Fingerprint Technician

Licenses:

State of Pennsylvania Licensed Private Investigator # MD5562012
State of Connecticut-Licensed Private Investigator # FA-2508
State of New York-Licensed Private Investigator #11000154190
State of New Jersey –Licensed Private Investigator # 8253

Training:

IAAI Process of Elimination, 3 Hours, 2015
IAAI Insurance and Fire Investigation, 4 Hours, 2015
IAAI Investigating Vehicle Fires Live Burn 16 Hours, 2013



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
609 South Kelly, Suite C-1
Edmond, OK 73003
(877) 271-1168 Telephone
(405) 340-8513 Facsimile
Certificate of Authorization No. 3201
Certification Expiration Date June 30, 2017

February 16, 2016

Re: RCG File No: 22803849
LLV Number: 4311491
VMF Location: 4029 W. Reno Road in Oklahoma City, Oklahoma
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 4311491 that occurred at 9300 N. Rockwell Avenue in Oklahoma City, Oklahoma, on October 28, 2015. In the course of our work, we examined and documented the fire-damaged vehicle and interviewed the VMF Shop Supervisor on December 14, 2015.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility in Oklahoma City, Oklahoma. The work to complete this assignment was performed by Fire Consultant Gary L. Cochran, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire originated on the underside of the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the underside of the engine compartment near the transmission where two metal fuel lines were attached to the top of the transmission.

3. There was physical evidence of the return fuel line becoming separated from the factory hose clamp.
4. The specific ignition sequence and cause of the fire was determined to be the direct result of the rear fuel line became separated from the factory hose clamp, causing fuel to spray onto the hot engine surface and hot exhaust system, causing the fuel vapors to ignite.

Observations

Exterior Inspection:

Exterior examination of the vehicle revealed smoke staining on the passenger side hood area. The remainder of the observable exterior was free of fire damage and intact.

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments, revealed no evidence of soot, smoke, heat or fire damage.

Engine compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated on the underside of the engine compartment. We observed minimal fire damage to the engine compartment, which included a small area of the bulkhead and rubber tubing in the area of origin. We examined all fluids levels, and all were within the recommended range. We examined the electrical system of the vehicle, and noted no electrical activity or arcing within the electrical system. We examined the wiring harnesses within the vehicle and noted they were all intact; the only fire damage noted was to two small wires in the area of origin. We observed that the battery cables had been disconnected prior to our examination. The vehicle was equipped with a GM fuel system.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of soot, smoke, heat or fire damage. The involved LLV was mounted on a GM frame. We observed in the area of origin and on the bottom side of the engine, transmission, and exhaust system, what appeared to be fuel that had been sprayed onto these areas.

We observed a loose rubber fuel line (return line) that had been clamped off at the time of our examination. The vice grip clamp had been placed on the hose by shop personnel prior to our examination.

We observed what appeared to be a fire extinguisher chemical agent on the engine and transmission.

Fuse Panel Inspection:

Examination of the fuse panel located within the operator's compartment revealed no evidence of soot, smoke, heat or fire damage. The fuse panel did not have a cover. No blown fuses were observed during our examination.

Area of Fire Origin:

The area of fire origin was determined to be on the underside of the engine compartment near the transmission where two metal fuel lines were attached to the top of the transmission, which originally had two rubber fuel lines connected to them with factory pressed hose clamps. The forward line was the supply fuel line and the rear line was the return fuel line. The point of fire origin was on the rear most fuel line (return line). There was physical evidence of the return fuel line becoming separated from the factory hose clamp.

Contributing Factors:

During our examination, we determined that the rear fuel line became separated from the factory hose clamp, causing fuel to spray onto the hot engine surface and hot exhaust system, causing the fuel vapors to ignite.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interviews:

We were not able to interview the carrier/operator during our examination, due to his work schedule. The incident report was received, and is attached in the file.

We interviewed the VMF shop supervisor, who did review the carriers incident report. He stated that the carrier/operator had smelled smoke inside the vehicle, pulled the vehicle over to a stop leaving the vehicle running, and called his supervisor to advise him of the smell and ask for another vehicle to finish the route. While the carrier/operator was sitting in the vehicle, a person came to the vehicle, and told him that the vehicle was on fire. He turned the vehicle off, and exited the vehicle before calling 9-1-1.

The Oklahoma City Fire Department arrived, and extinguished the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gary L. Cochran

Gary L. Cochran, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

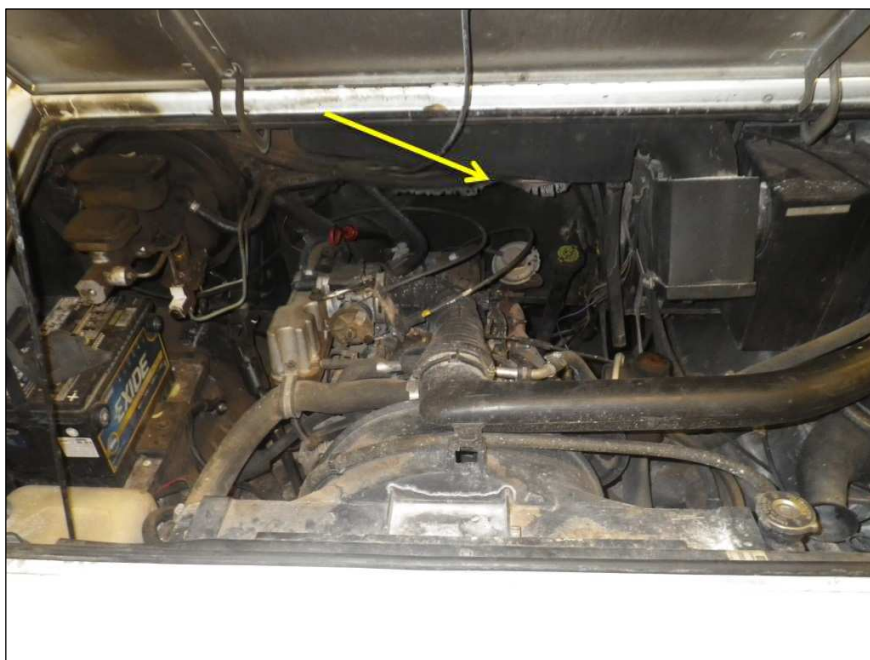
Attachments: Photographs, CVs

February 16, 2016
RCG File No. 22803849

Photograph 1
View of front of the LLV.



Photograph 2
View of engine compartment. Arrow indicates small area of fire damage to bulkhead.



February 16, 2016
RCG File No. 22803849

Photograph 3

View of fire damaged fuel lines, two factory hose clamps and fire damaged cable. Red line is supply, and orange line is return.



Photograph 4

View of two factory fuel clamps. Right side line (return) is free of any debris.



February 16, 2016
RCG File No. 22803849

CVs



**GARY L. COCHRAN, IAAI-CFI, NAFI-CFEI & CVFI
FIRE CONSULTANT**

Mr. Cochran has more than 30 years of experience in fire service. He has actively served as a Fire Investigator for two separate municipalities, and has served as an active member of the Tarrant County Fire/Arson Investigator's Association and most recently with the Grapevine Fire Department, Texas, as the Fire Code Enforcement Officer and Fire Investigator. He was also the Fire Code Enforcement Officer and Fire Investigator for the Town of Westlake, Texas. Mr. Cochran has extensive training in fire and criminal investigations, as well as hazardous material, nuclear, chemical, and biological and EMS incidents. He is certified through the International Association of Arson Investigators as a Certified Fire Investigator (IAAI-CFI) as well as the National Association of Fire Investigator as a Certified Fire and Explosion Investigator (NAFI-CFEI) and Certified Vehicle Fire Investigator (NAFI-CVFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Fire Protection Technology, Tarrant County College
Fire Service Administration, Weatherford College
Occupational Safety & Health, A.A.S., Columbia Southern University
International Association of Arson Investigators (IAAI), Texas Chapter, 2007 - Present
International Association of Arson Investigators (IAAI), 2007 - Present
International Association of Fire Fighters (IAFF)
National Association of Fire Investigators (NAFI), 2005 - Present
Texas Firefighters Association, 1987 - Present
Tarrant County Fire and Arson Investigators Association (TCFAIA), 2005 - Present
North Texas Fire Investigators Association (NTFIA), 2008 - Present

SPECIALIZED EDUCATION

Complex Arson Investigation Techniques for the Insurance Industry (IAAI) 2014
A.A.S. - Occupational Safety & Health, Columbia Southern University 2012
Texas IAAI Arson Conference, Austin, TX 2012
Pate Hands-On Vehicle Fires – Tested 2012
CVFI (NAFI) - Tested 2012
Texas IAAI Arson Conference, Austin, TX 2011
NFA – Forensic Evidence Collection, Emmitsburg, MD 2011
South Texas Arson Conference, South Padre, TX 2010
NFA – Fire/Arson Origin and Cause Investigations, Emmitsburg, MD 2010
NFA 25–Inspections, Testing and Maintenance of Water Based Fire Protection Systems, Houston, TX 2010
NFPA 72 - Inspections Testing and Maintenance of Fire Alarms, Houston, TX 2010
East Texas Arson Seminar, Longview, TX 2009
Certified Fire Investigator (IAAI-CFI) Tested 2009
Legal Aspect of Fire Investigations, North Richland Hills, TX 2009
East Texas Arson Seminar, Longview, TX 2008
NFA – Developing Fire & Life Safety Strategies, Emmitsburg, MD 2008
NFA – Plans review for Inspectors, Emmitsburg, MD 2007
TCLEOSE Basic Police Officer 2007
Intermediate Fire/Arson Investigator 2007
Intermediate Fire Inspector 2007
IAAI Texas Chapter Arson Seminar, Austin, TX 2007
TEEX – Courtroom Preparation for First Responders, Benbrook, TX 2006
Certified Fire and Explosion Investigator (NAFI-CFEI) Tested 2006
Advanced Firefighter 2005
Juvenile Fire Setter Intervention Specialist I & II Tested 2005
IAAI Texas Chapter Arson Seminar, Austin, TX 2005
Hazardous Material Technician School, Dallas, TX 2000
Paramedic School, Hurst, TX 1985
Basic Firefighter School, Bedford, TX 1983



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
10 Kimler Drive
Suite G
Maryland Heights, Missouri 63043
Telephone: (314) 432-9255

January 21, 2020

Re: RCG File No: 100022387
LLV Number: 4311953
LLV Location: Kar Doctor Automotive 145 County Road Jackson, Missouri
Subject: Preliminary/Final Report

A fire reportedly occurred on November 25, 2019, involving a 1994 Grumman Model LLV 4311953 with VIN 1GBCS1049R298058. At the time the fire occurred the vehicle was located at the intersection of County Road 335 and Missouri Highway 34/72 in Jackson, Missouri. Rimkus Consulting Group, Inc. was retained to examine the vehicle.

In the course of our work, we inspected and photographed the vehicle, excavated fire debris, and interviewed a technician with Kar Doctor Automotive. Our work to complete this assignment was conducted by Philip M. Noah, IAAI-CFI, Fire Division Manager. This report was reviewed by David R. Meyers, IAAI-CFI (V), Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations" and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. Based on fire patterns, witness statements and fire dynamics, it was determined that the fire originated along the mail side of the engine block within the engine compartment.
2. The specific ignition sequence and cause of the fire was determined to be due to the third spark plug from the front of the engine becoming displaced from the engine block while the engine was operating. Displacement of the spark plug allowed fugitive atomized gasoline to escape the cylinder and contact the exhaust manifold on the mail side of the engine igniting the fuel vapors.

Observations

Exterior Inspection:

An exterior examination of the vehicle began at the front and continued in a clockwise direction. The front of the vehicle exhibited fire patterns on the rear of the hood and around the vent opening between the hood and the windshield. The remaining exterior sides of the vehicle were unremarkable, with respect to fire damage.

Interior Inspection:

The interior of the vehicle was unremarkable with respect to fire, smoke or heat damage.

Engine Compartment Inspection:

The engine compartment exhibited fire, smoke, and heat damage along the rear of the engine near the bulkhead on the mail side. The underside of the hood also exhibited fire damage toward the rear. The most severe damage was along the mail side of the engine near the spark plugs and exhaust manifold. The third spark plug from the front of the engine had been displaced from the engine block. The spark plug was identified connected to the spark plug wire near the mail side of the engine. The top of the engine cylinder was visible through the spark plug hole. The vehicle was equipped with a 2.2 liter engine with a standard ignition coil.

Undercarriage Inspection:

Inspection of the undercarriage was unremarkable with respect to fire damage. The vehicle was mounted on a GM frame. The exhaust system, transmission and drive train were observed with no fire damage.

Fuse Panel Inspection:

Inspection of the fuse panel was unremarkable with respect to fire damage or abnormal electrical activity.

Area of Fire Origin:

Based on fire patterns, witness statements and fire dynamics, it was determined that the fire originated along the mail side of the engine block.

Potential Contributing Factors:

The third spark plug from the front of the engine was displaced from the engine block while the engine was operating. Displacement of the spark plug allowed fugitive atomized gasoline to escape the cylinder and contact the exhaust manifold on the mail side of the engine.

Evidence Collected:

No evidence was collected.

Witness Statements:

The carrier was driving LLV 4311953 to the contractor for repairs as the LLV had been overheating on the route. As he arrived at the contractor's location, the engine died and would not restart. He walked on up to the contractor's shop entrance and advised them the LLV died and would not restart. The contractor's mechanic went to tow the LLV on into the shop for repairs when they noticed smoke coming from under the vehicles hood. The mechanic grabbed a nearby fire extinguisher, raised the hood of the LLV, and extinguished the fire. Upon initial inspection, the mechanic found that the LLV had blown a spark plug out of the cylinder head. This possibly allowed raw fuel to spray out of the exhaust manifold.

Service Records:

A review of service records did not reveal recent work to replace the spark plugs. The last PM was completed in July of 2019. The vehicle had a history of transmission problems.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Philip M. Noah

Philip M. Noah, IAAI-CFI
Fire Division Manager

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

January 21, 2020
Rimkus File No. 100022387

Photograph 1

View of from the front with fire damage along the vent behind the hood.



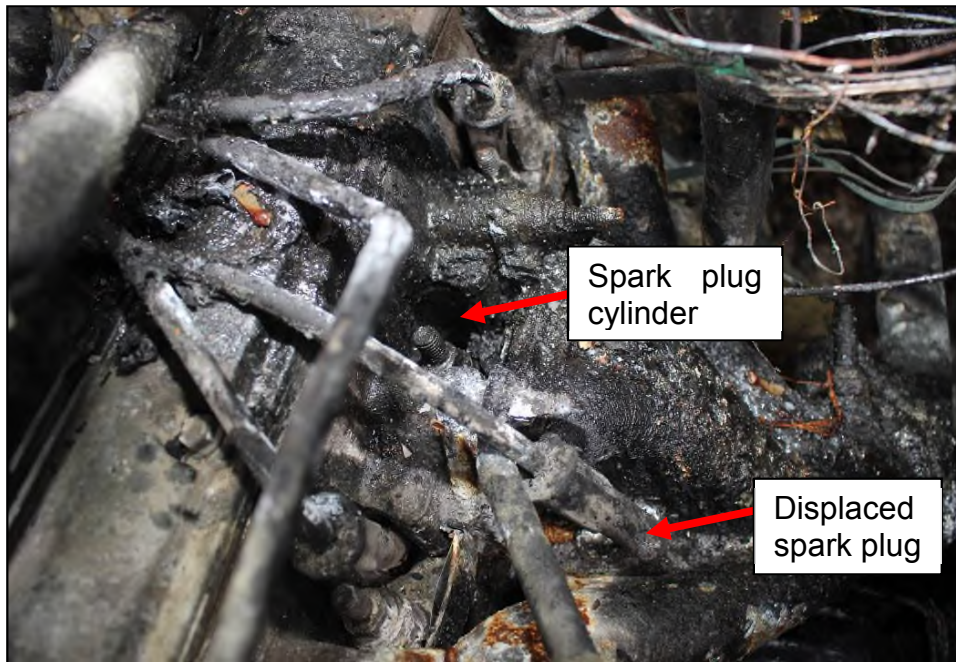
Photograph 2

View of engine compartment area of origin noted.



Photograph 3

View of the mail side of the engine.



Photograph 4

Spark plug attached to the spark plug wire.



January 21, 2020
Rimkus File No. 100022387

Curriculum Vitae



Philip M. Noah, C.F.I., C.V.F.I

Manager
Fire Division

Background

Mr. Noah is a Certified Fire Investigator, a Certified Vehicle Fire Investigator, and a licensed private fire investigator in Missouri. He is also a licensed private investigator in Arkansas, Oklahoma, Kansas, and Illinois.

He has over 28 years of experience in fire suppression operations, fire/explosion investigations, technical rescue, hazardous material incidents, fire code enforcement, and building construction plans review. Over his career, he has led or assisted in the origin and cause of more than 500 fire and explosion investigations. As a fire investigator, he conducted origin and cause investigations on fatal structure fires, residential fires, commercial fires, and vehicle fires.

As the Springfield Fire Dept. Fire Marshal, Mr. Noah served as a public safety bomb technician on the Springfield Missouri Bomb Squad, and was a founding member of the Greene County, MO Arson Task Force, during which time he worked closely with the FBI and the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). While in this position, he also performed hundreds of building plans reviews evaluating structures for International Fire Code compliance. Mr. Noah has instructed courses in fire scene evidence preservation, explosives awareness, and fire investigation awareness for the insurance industry.

Mr. Noah has testified and been qualified as an expert in court proceedings pertaining to fire origin and causation. Mr. Noah is also a court-certified expert in the field of fire origin and cause determination.

Contact Information

(314) 432-9255

pnoah@rimkus.com

10 Kimler Drive,
Suite G
Maryland Heights, MO 63043



Rimkus Consulting Group, Inc.
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, New Jersey 07631
(201) 368-8551 Telephone
(201) 368-8557 Facsimile

Certificate of Authorization No. 24GA28127700

May 21, 2019

Re: RCG File No: 100000194
LLV Number: 4312095
VMF Location: 1020 Westchester Avenue in White Plains, New York
Subject: Preliminary/Final Report

Dear Ms.

On April 8, 2019, a fire occurred involving USPS LLV 4312095. The loss location was reported to be 108 Warren Street in Somers, New York. LLV 4312095 was examined at the VMF located at 1020 Westchester Avenue in White Plains, New York.

Rimkus Consulting Group, Inc. was retained to examine LLV 4312095, VIN 1GBCS104OR2918126 to determine the cause of the fire. On April 18, 2019, we conducted an examination of the fire damaged LLV and documented the vehicle with photographs. The vehicle examination was conducted by Fire Consultant Jeffrey Wilson, IAAI-CFI. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using the systematic approach as recommended in the current edition of the National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the mail side of the engine along the side of the engine block.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

Observations

Exterior Inspection:

The vehicle sustained severe to the front half of the vehicle. The windshield was completely consumed. Both of the front tires were observed to be completely damaged and the both rear tires were undamaged.

Interior Inspection:

The cargo area sustained smoke damage throughout. The driver's compartment sustained severe fire and heat damage. The combustible material of the driver's seat had been consumed. The top portion of the mail rack along the left side had been consumed. The steering column had collapsed. The front bulkhead had been consumed. The entire dashboard, wiring and wiring harness were completely consumed and could not be examined.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. The vehicle was equipped with a GM 2.5L, four-cylinder gasoline engine. The vehicle was also equipped with a fuel injected throttle body and electronic ignition. The engine compartment sustained severe fire and heat damage throughout. The power steering unit sustained fire damage. The reservoir had been consumed. The upper portion of the flexible return line and reservoir had been consumed. The radiator hoses were also consumed.

The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been consumed. The alternator sustained severe fire and heat damage.

The entire battery case had been consumed. The conductors had become detached from the side terminals. The insulation had been consumed but displayed no evidence of adverse electrical activity. The radiator had been fully consumed and was unable to be examined. The air filter had also been consumed.

The brake lines positioned on the left side of the engine sustained severe fire and heat damage. The tubing had also been fully consumed. The lower portion of the brake line displayed severe damage.

Undercarriage Inspection:

The involved LLV was mounted on a GM frame. No fire damage was observed to the majority of the underside of the vehicle, except for a limited area below the engine compartment, above the position of the exhaust manifold. Fire patterns observed on the vertical section of the pipe leading to the exhaust manifold was the lowest area of fire damage. Fuel lines on the undercarriage were intact along the frame rail and were not affected by the fire until they were in a higher position above the exhaust manifold. The overall observation was that the fire began above the undercarriage and more specifically within the engine compartment

Fuse Panel Inspection:

We were unable to examine the fuse panel as it had sustained severe fire damage and mass loss to the panel and all of the fuses. As a result of the fire damage and mass loss, we were not able to determine if any fuses were open or blown.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, the fire originated within the engine compartment of the vehicle. The area of origin was determined to be on the mail side of the engine compartment. A more specific area of origin could not be determined due to the severe damage and lack of remaining physical evidence. The specific point of origin could not be conclusively identified due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

Potential Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

Evidence Collected:

There was no physical evidence collected for laboratory analysis

Service Records:

A review of the provided service records for the involved LLV was conducted. Over the past year and a half, the LLV had only received routine service (head lamp, rear door repair) and the normal scheduled preventative maintenance. An engine replacement occurred in February of 2019. Additionally, as a part of this installation, spark plugs with cables, fuel injectors, ignition module, and a variety of sensors and belts were also installed.

Witness Statement:

Multiple attempts to interview the carrier, Mr. , were conducted. No return call was ever received from the carrier. Per the VMF manager the carrier stated that at approximately 1:30 P.M., he was driving on Warren Street when he began to hear ticking from the engine compartment. Shortly thereafter, he began to see smoke coming from the air vents in the dashboard. He pulled the vehicle over and then observed fire coming from the engine compartment. Ms. also stated that this vehicle had a new engine installed. Additionally, as a part of this installation, spark plugs with cables, fuel injectors, ignition module, and a variety of sensors and belts were also installed. She also stated when the work was completed, the vehicle was flat bedded back to the post office. The day of the fire was the first time that the vehicle was on the road after the engine installation.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jeffrey Wilson

Jeffrey Wilson, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

May 21, 2019
RCG File No. 100000194

Photograph 1

A view of the exterior front of the vehicle.



Photograph 2

Mail side front of vehicle.



May 21, 2019
RCG File No. 100000194

Photograph 3

A view of the engine compartment.



Photograph 4

A view of the engine compartment.



Photograph 5

A view of the engine compartment mail side lower area.



Photograph 6

Remains of the battery.



May 21, 2019
RCG File No. 100000194

Curriculum Vitae



Jeffrey Wilson, CFI, CFEI

Fire Consultant
Fire Division

Background

Mr. Wilson holds a B.S. degree in Fire Science and is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire & Explosion Investigator (NAFI-CFEI) with the National Association of Fire Investigators, a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard) and a New York State Fire Investigator. He is also Licensed Private Investigator in New York, New Jersey, Connecticut and Massachusetts.

His professional career includes 20 years of experience with the New Rochelle Police Department. He was promoted to the rank of Detective in 1995 and was later assigned to major case investigations in 2005 which included among other investigations, arson. He obtained certification as a New York State Fire Investigator in 2005 and was then appointed to the Westchester County Cause and Origin team at that time, which he continues to serve on today. In addition to his law enforcement career, Mr. Wilson has over 30 years as a volunteer firefighter and obtained the rank of Fire Captain.

He has investigated and determined the origin and cause of several hundred fires to include commercial structures, residential structures, vehicles and wild land. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Wilson has testified on several occasions involving the investigation of fires in New York.

Contact Information

(551)250-3878

jwilson@rimkus.com

25 Rockwood Place, Suite
200
Englewood, NJ 07631



Rimkus Consulting Group, Inc.
1160 N. Town Center Drive, Suite 150
Las Vegas, NV 89144
(702) 304-1508 Telephone
(702) 304-1498 Facsimile

May 4, 2016

Re: RCG File No: 01208194
LLV Number: 4313395
VMF Location: 1001 East Sunset Road in Las Vegas, Nevada
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 4313395 that occurred at 5816 Mary Way in Las Vegas, Nevada on February 22, 2015. In the course of the work, we examined and documented the fire-damaged vehicle on February 25, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 1001 East Sunset Road, in Las Vegas, Nevada. The work to complete this assignment was performed by Fire Consultant Joseph Jadowski, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. A thorough examination of the involved LLV indicated that the fire originated in the engine compartment.
2. The specific area of fire origin was determined to be in and around the rubber fuel lines and the operating hot exhaust manifold.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of the fuel lines routed adjacent to the hot exhaust manifold of the operating LLV.

Observations

Exterior Inspection:

We began our examination of the LLV 4313395 by conducting a complete walk-around of the vehicle. We observed fire-related damage to the front wheels and tires, grill assembly, hood, front fenders, passenger and drivers side doors, windshield, driver's side glass, passenger side glass, passenger side cargo compartment, rear door, taillight assemblies, rear bumper, drivers side cargo compartment and roof system. The fire patterns visible on the exterior of the vehicle indicated the fire originated within the engine compartment.

Interior Inspection:

The interior examination of the vehicle, including the operator's compartment roof system, bulkhead (firewall) steering system, dash, instrument panel, fuse panel, wiring, wiring harnesses, ignition, front seat, passenger side console, front door panels, rear cargo compartment and interior cargo door panels sustained extensive physical evidence of fire-related damage.

Engine Compartment Inspection:

The examination of the engine compartment revealed severe fire-related damage. The 1994 GMC LLV 4313395 was powered by an inline mounted gasoline-fuel injected, four-cylinder engine with rear wheel drive and an automatic transmission. We inspected the radiator, radiator shroud, air intake system, fuel filter system, fuel lines, belts, hoses, battery, battery cables insulation, battery box, electrical wiring, engine compartment wiring harness, master cylinder, and all plastic components within the upper engine compartment which revealed extensive fire-related damage. The lower engine compartment showed evidence of oil leakage although the engine dipstick, which indicated the oil level was within operating levels. The engine block, heads, exhaust manifold, alternator, brake booster, transmission, and remaining noncombustible components also sustained severe fire related damage (**Photographs 7 through 9**). The LLV had a GM fuel filter system.

Undercarriage Inspection:

Examination of the undercarriage revealed no observable physical evidence of fire-related damage from the bell housing rearward. The undercarriage below the engine compartment displayed fire related damage to the lower frame, control arms steering system, and lower engine compartment. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

Examination of the fuse panel located within the driver's side operator's compartment revealed severe fire-related damage to the fuse panel and the entire passenger and engine compartments electrical system and wiring harnesses.

Area of Fire Origin:

The area of fire origin was determined to be within the engine compartment in and around the hot exhaust and fuel lines.

Contributing Factors

Prior to our inspection of the vehicle and prior to the RCG assignment being received, the LLV 4313395 had recent repair work performed involving the fuel system. Upon completion of the repairs, the operator of the vehicle had complained of intermittent gasoline odors while operating the vehicle. On the day of the fire, he did not detect any unusual gasoline odors.

Photographs provided by USPS staff also showed extensive fire-related damage to the LLV 4313395.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interviews:

On Thursday, February 25, 2015, an on-site interview was conducted regarding the circumstances of the fire that occurred to the USPS vehicle on February 22, 2016. The USPS carrier and operator of the vehicle reported the following:

- He recalled coming to work on February 22, 2106, loading the vehicle with mail to be delivered. He stated he left the post office parking lot and drove a short distance to deliver mail on an alternate route. At that time, there were no indications of any type of gasoline odors or noticeable mechanical issues with the vehicle. He stated he drove the vehicle for approximately four hours again without any type gasoline odors or noticeable mechanical issues with the vehicle.
- He stated he filled the vehicle with gasoline and then proceeded to his route to complete the deliveries for the day. Again, he stated he drove the vehicle for approximately two hours, again without any type gasoline odors or noticeable mechanical issues with the vehicle.

- He stated he was driving up Mary Way when he observed white smoke emanating from the front portion of the vehicle. At that time, the vehicle was performing normally. He stopped the vehicle, shut down the ignition, and called his supervisor to let him know the vehicle was smoking. As he was on the phone with his supervisor, he observed that the paint on the left (driver's side) hood was beginning to melt. At that point, he hung up with his supervisor and called the fire department to report the incident. He stated that by the time the fire department had arrived, the entire front engine compartment and passenger compartment were fully involved with fire.

Service Records:

A review of the provided service records indicated that the last service had been performed on the vehicle in January 2016, prior to the fire. During this PMI, the fuel system received maintenance. The odometer reading at the time of service was 101,674.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Joseph M. Jadowski

Joseph M. Jadowski, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

May 4, 2016
RCG File No. 01208194

Photograph 1

View of the fire-related damage to the exterior of the LLV.



Photograph 2

View of the fire-related damage to the exterior of the LLV.



May 4, 2016
RCG File No. 01208194

Photograph 3

View of the fire-related damage to the exterior of the LLV.



Photograph 4

View of the exterior, passenger and cargo compartment of the LLV.



May 4, 2016
RCG File No. 01208194

Photograph 5

View of the fire-related damage to the cargo compartment of the LLV.



Photograph 6

View of the cargo compartment and driver's compartment of the LLV.



May 4, 2016
RCG File No. 01208194

Photograph 7

View of the engine, passenger and cargo compartments of the LLV.



Photograph 8

View of the fire-related damage to the engine compartment of the LLV.



May 4, 2016
RCG File No. 01208194

Photograph 9

View of the fire-related damage to engine compartment of the LLV.



Photograph 10

View of the rear under carriage of the LLV.



May 4, 2016
RCG File No. 01208194

Photograph 11

View of the rear under carriage of the LLV.



Photograph 12

View of the front rear under carriage compartment of the LLV.



May 4, 2016
RCG File No. 01208194

CVs



**JOSEPH M. "MICK" JADLOWSKI — IAAI-CFI, NAFI-CFEI, NAFI- CVFI, PRO BOARD
CERTIFIED
FIRE CONSULTANT**

Mr. Jadowski has an extensive background in fire and explosion origin and cause investigation which includes over 7 years of private sector forensic consulting and greater than 23 years on the City of Omaha Fire Department with 10 years specializing in investigations. He has investigated over 1,000 fires and made over 50 felony arrests for arson and other related crimes during tenure with the Omaha Fire Department. He has conducted fire and explosion investigations that include commercial, residential, and automotive. Additionally, he has vast experience in failure analysis and products liability claims of household appliances.

He has completed numerous educational seminars and continuing education courses. In addition to his educational achievements, he has experience in origin and cause investigations, researching fire code violations, and assisting with failure analysis of appliances.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Vehicle Fire Investigator, CVFI (#13297-6862v): National Association of Fire Investigators

Certified Fire Investigator, CFI (#13-004): International Association of Arson Investigators

Certified Fire and Explosion Investigator, CFEI (#132976862): National Association of Fire Investigators

Pro Board Certified Fire Investigator (#251967): National Board on Fire Service Professional Qualifications

International Association of Arson Investigators – Member

National Association of Fire Investigators – Member

Private Investigator License in Nevada (NV PILB License #1262), Arizona (1596879), Utah (R102415), Montana (PSP-PI-10153), Washington (3664) California (PI 24783)

EMPLOYMENT HISTORY

2009 - Present

Rimkus Consulting Group, Inc.

2008 - 2009

Unified Investigations and Science

1985 - 2007

City of Omaha Fire Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
7851 Woodland Center Boulevard
Tampa, Florida 33614
Telephone: (800) 498-3060
Certificate of Authorization No. 8301
Certification Expiration Date February 28, 2021

July 17, 2019

Re: RCG File No: 100005539
LLV Number: 4313558
VMF Location: 11902 N Florida Avenue Tampa, Florida
Subject: Preliminary/Final Report

Dear

On May 28, 2019, a fire involving a US Postal Service vehicle LLV 4313558 occurred. The LLV was a 1994 model and the Vehicle Identification Number (VIN) was 1GBCS1048R2919752 with a 2.2 liter gasoline engine. At the time of the fire, the vehicle was operating delivering mail. On June 6, 2019, Rimkus Consulting Group, Inc. was retained to determine the origin and cause of the fire.

Our inspection of the vehicle occurred on June 14, 2019, at the USPS Vehicle Maintenance Facility (VMF) located at 11902 N. Florida Avenue in Tampa, Florida. In the course of our work we inspected and photographed the vehicle, reviewed maintenance and repair records, reviewed data and completed interviews. The work to complete this assignment was performed by Mr. Thomas W. Young, IAAI-CFI (V) VP Fire Division. A technical review of this file was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the left side of the engine towards the rear.
3. The specific ignition sequence and cause of the fire was consistent with ignition of either leaking or atomized fuel encountering the hot surface area of the components or another competent ignition source. The concentrated area of damage was in the area of the exhaust manifold near the injectors 3 & 4 and the rear half of the plenum.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Localized fire damage was observed in the engine compartment. It was observed that a centralized portion of the engine hood and a burn through hole approximately 36 inches by 16 inches. The windshield sustained cracking near the windshield cradle area. The interior dashboard remained unaffected by the fire event. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size and manufacturer. There was no evidence to indicate that the brakes, wheel assemblies, or axles had failed. The fuel cap was in place and secured.

Interior Inspection:

An interior examination of the LLV revealed no physical evidence of fire or thermal damage within the interior compartment. Minimal smoke damage was observed along the center of the dash. Fire patterns and the analysis of fire dynamics revealed that the fire communicated upward and outward from the left side of the engine compartment resulting with minimal damage to the interior. The fuse box was inspected, and no fuses were noted to be open or blown.

Engine Compartment Inspection:

The engine compartment was examined. The 2.2-liter engine was manufactured by General Motors. Localized fire damage was observed along the bulkhead of the engine compartment. The most distinct area of fire damage was observed along the left side of the engine compartment in proximity to the exhaust manifold and the bulkhead. Fire

patterns communicated upward and outward from the left rear corner of the engine. The damage included breaching the composite hood material at the approximate center portions.

At the time of the fire, there was a 12-volt battery mounted along the right front corner of the engine compartment. The battery displayed minor thermal damage. Minimal thermal damage was observed to the battery conductors. No physical evidence of electrical activity was observed to the battery conductors.

As a result of the fire, the electrical conductors and harnesses routed along the upper bulkhead were damaged above the general area of fire origin. No anomalies or physical evidence of electrical activity was observed along several small conductors located in along the left rear portion of the compartment.

The alternator was located along the right front portion of the engine. No physical evidence of electrical activity was observed to the alternator. There was evidence of repairs and inline splices (as noted in the service history).

The fuel lines were routed from the left rear portion of the engine compartment and downward toward the undercarriage. The rigid portions of the fuel lines were intact with no outward indication of damages.

Undercarriage Inspection:

The undercarriage of the LLV was inspected. No indication of a fire origin or sustained fire damage was observed. Physical evidence of fluid leaks was observed in and along the rear of the tail shaft of the transmission. The involved LLV was mounted to a GM frame. The fuel filter was located along the frame rail portion of the LLV and in proximity to the mail side frame rail. There were no indications of damage to the fuel delivery system pertaining to the undercarriage inspection.

Fuse Panel Inspection:

The fuse panel was located along the right side of the dash and in proximity to the steering column and control pedals. No physical evidence of fire damage was observed to the fuse panel. No open or blown fuses noted.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated along the left rear corner of the engine and in proximity to the topside of the exhaust manifold. The combustible material within the area was identified as the plastic air intake tube. While this caused much of the fire to spread, it was not a contributing factor in the ignition sequence. The ignition source of the fire was most likely heat generated from the

engine's exhaust manifold. The specific ignition sequence and cause of the fire was a result of gasoline vapors produced from a fuel distribution component. The likely contributing fuel was gasoline leaking and/or being dispersed from the rear portion of the engine.

Potential Contributing Factors:

A fuel leak associated with the fuel distribution in the general area of the fuel plenum and 3-4 fuel injectors. A contributing factor is a fluid leak and its associated vapors in the presence of a suitable ignition source.

Evidence Collected:

The plenum, related mass air flow and fuel regulator, all four fuel injectors, respective electrical circuits and fuel injector retainer plate. The fuel injectors and related components collected will be analyzed further to potentially identify culpable component causation.

Interview:

At the time of the fire, the LLV was being operated by postal carrier. She reported that she had no notable operational deficiencies during the day of the incident. She did mention she thought the day before she may have smelled gasoline but wasn't sure. Overall, the vehicle was operating fine on the date of the incident.

On the date of the incident, she had left the vehicle to make a delivery and came back to start the vehicle and a fire ensued.

Service Records:

A review of the service records provided for the involved LLV was completed. it was noted that several instances of the subject vehicle had been noted over the prior years for various reasons by Crockets towing service.

10/21/2016 - All four fuel injectors were replaced.

11/08/2017 - A fuel relay was replaced.

05/10/2019 - Fuse link to the alternator was replaced.

After a review of the service records, it was determined that several typical maintenance issues had occurred on the vehicle over the previous years prior to the fire. None of the records provided indicated that within the area the fire originated any recent repairs had occurred.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Thomas W. Young

Thomas W. Young, IAAI-CFI (V)
VP, Fire Division

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manger

Attachments: Photographs, Curriculum Vitae

July 17, 2019
Rimkus File No. 100005539

Photograph 1

Front view of vehicle.



Photograph 2

Pattern of localized fire damage.



Photograph 3

Engine view of fire damage.

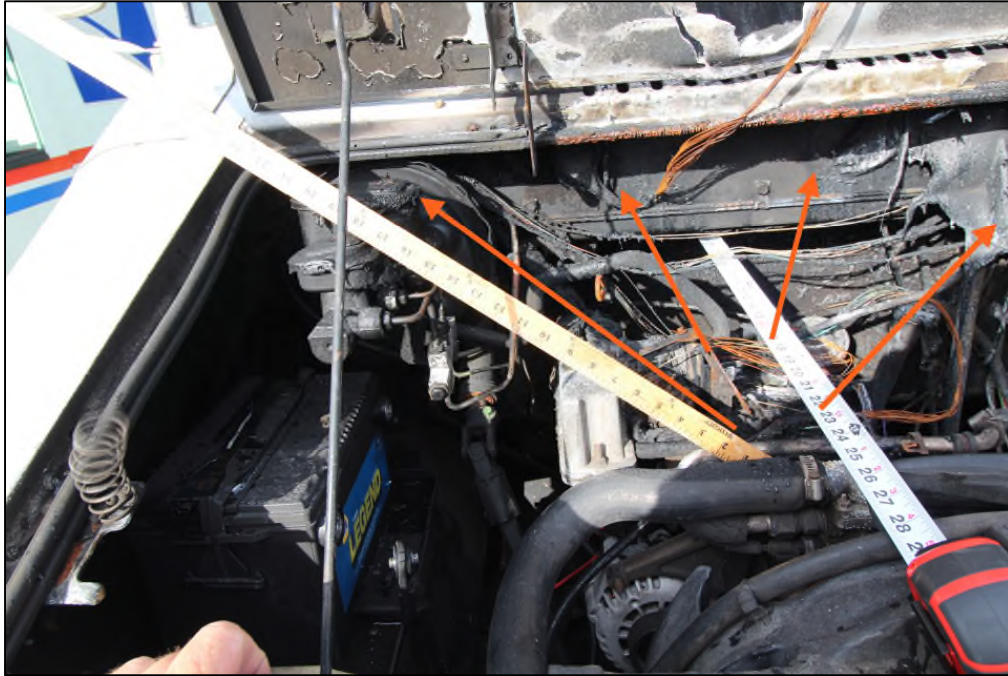


Photograph 4

Additional image of engine damage.



Photograph 5
Fire pattern documentation.



Photograph 6
Exemplar engine compartment.



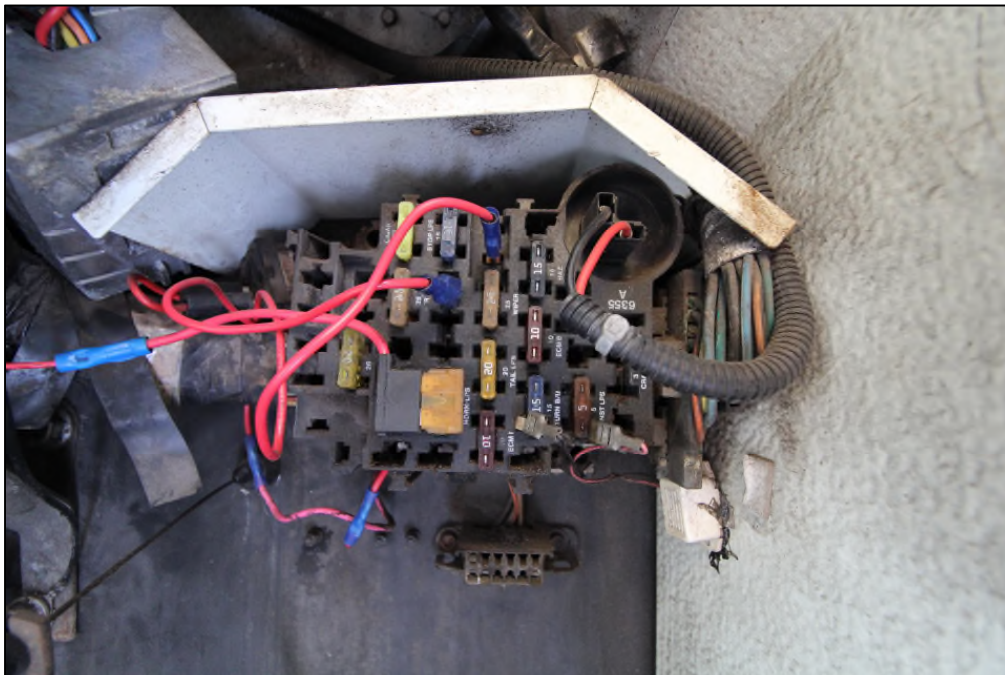
Photograph 7

Coil packs sustaining drop down thermal damage.



Photograph 8

Interior fuses 7828.



Photograph 9

Injector and retainer clip (exemplar).



Photograph 10

Exemplar injectors



Photograph 11
Injectors removed.



Photograph 12
Air induction (plenum) removed.



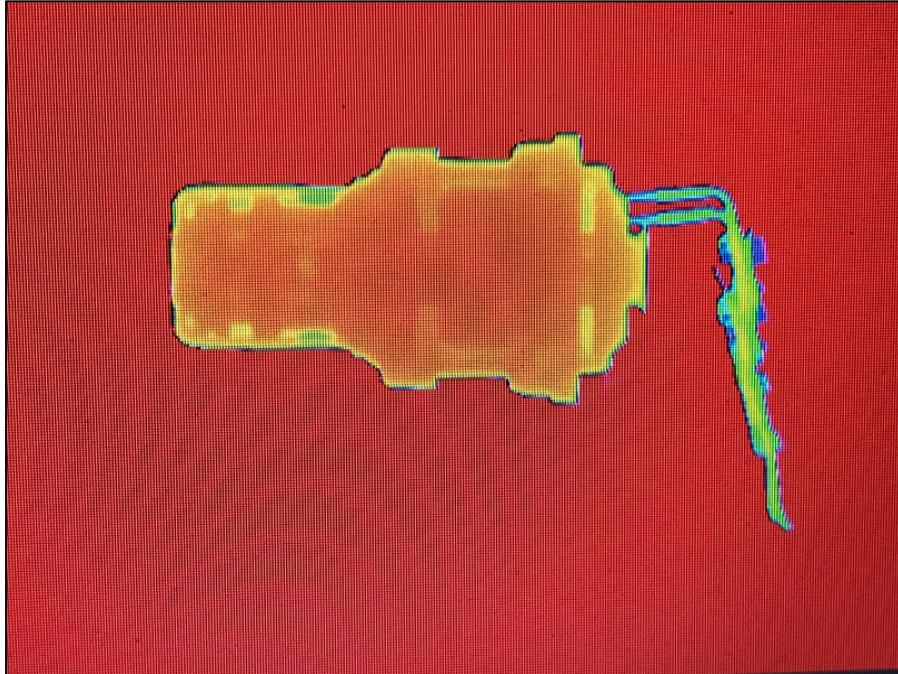
Photograph 13
Injector positioning.



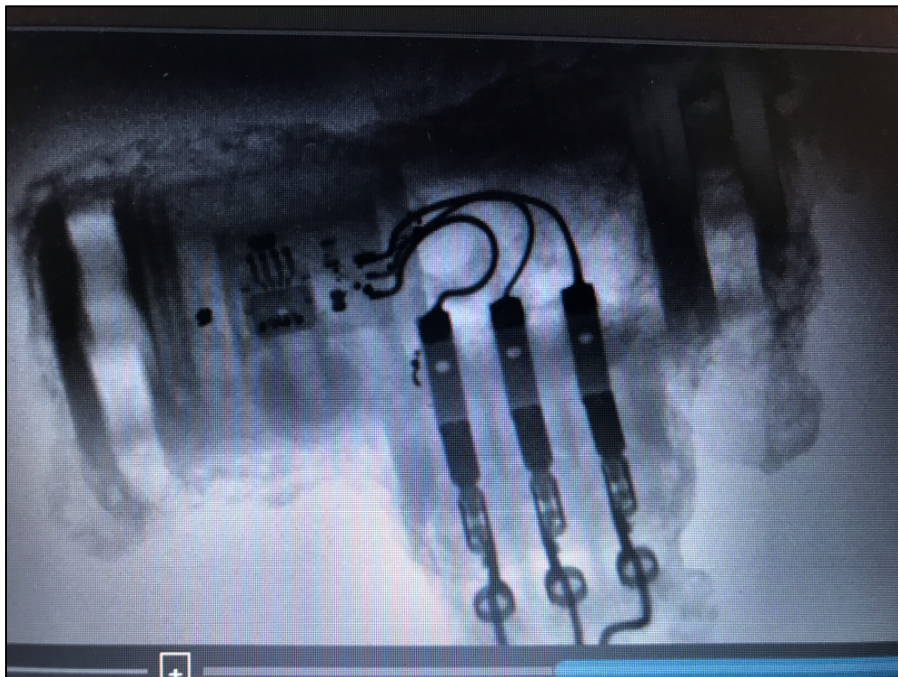
Photograph 14
Items retained for further analysis.



Photograph 15
Injector x-ray.



Photograph 16
Map sensor x-ray.



Curriculum Vitae



Thomas W. Young, IAAI, CFI, (V) CFEI, CFII
Vice President
Fire Division (Officer)

Background

Mr. Young has completed and maintains state national and international certifications as Fire Investigator, Fire Investigator Instructor, Fire Inspector, Fire Officer, and Basic Fire Instructor. He has also authored fire safety articles in fire engineering publications, as well as firehouse and local municipality newsletters. He participates in, designs, and instructs educational seminars and continuing educational courses. He has conducted Live Burn Testing to include appliances, vehicles, and closed room fire tests and studies.

Mr. Young's professional career includes 27 years with St. Petersburg Fire and Rescue. In that capacity, he has been involved in many different emergency service positions including Fire Fighter, Driver Engineer, Station/Line Officer, Public Information Officer, Community Affairs Director, Deputy Fire Marshal and Fire Investigations Task Force Supervisor. As a Florida State Certified Fire Inspector, he oversaw code compliance, crowd management, fire safety analysis, special events, safety management, commercial and industrial fire emergency operations and reviewing fire contingency plans. Mr. Young supervised the origin and cause efforts for the St. Petersburg Fire and Rescue for over 10 years. He has testified as an expert witness in court cases and has testified before a Grand Jury. He has also been involved in special projects such as juvenile fire setters, an educational intervention program that through a committee based approach he was instrumental in developing. He has served as the department's shipboard firefighting Instructor. He has a strong marine, automobile and heavy equipment investigative background. Mr. Young has been recognized for his achievements by being the recipient of awards that include, Fire Officer of the Year, and The State of Florida's, Florida Fire Marshals Public Educator of the Year.

Currently, Mr. Young oversees the fire investigation efforts, which

Contact
Information
(813) 289-3060
twy@rimkus.com

7851 Woodland Center
Blvd.
Tampa, FL 33614

include training, hiring, and supervising a team of highly trained and experienced fire consultants. He maintains state private investigator licenses as the Business and Compliance Manager in multiple states.



Rimkus Consulting Group, Inc.
5099 Commercial Circle, Suite 100
Concord, California 94520
Telephone: (925) 677-7445

July 31, 2019

Re: RCG File No: 100008225
LLV Number: 4313616
VMF Location: 40 Bellam Boulevard San Rafael, California
Subject: Preliminary / Final Report

Dear

On July 8, 2019, a fire involving USPS LLV 4313616 reportedly occurred while traveling south bound on highway 101 in the Healdsburg, California area. The vehicle was manufactured by General Motors in 1994 and was a Grumman model LLV-93 RH with VIN 1GBCS1046R2919765.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the San Rafael VMF located at 40 Bellam Boulevard in San Rafael, California. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on July 16, 2019. The vehicle examination was conducted by Fire Consultant Jimmie McCants, NAFI - CFEI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The vehicle sustained moderate fire damage to the engine and operator compartments from a fire originating within the engine compartment.
2. The area of origin was determined to have been on the left hand, mail side of the engine compartment, in the area of the exhaust and top of the engine. The engine is a 2.2 liter, L-4 engine.

3. The specific ignition sequence and cause of the fire was the radiator hose failing and the antifreeze being blown into the engine compartment. The driver then restarted the LLV and drove it to the post office a few miles away. The additional heat from the exhaust running allowed the temperature to get hot enough to ignite the antifreeze.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The front grill and lights of the LLV were observed to be intact with no fire damage. A burn pattern was observed on the hood of the engine compartment, from the middle of the compartment towards the bulkhead. The rest of the exterior panels showed no signs of damage by the fire.

No damage was observed to the exterior cargo area of the vehicle. Based on the fire patterns observed, it was determined the fire initiated within the engine compartment then progressed into the operator's compartment through the heater core and vent area.

Interior Inspection:

The interior cargo/mail area sustained minor to moderate fire, smoke and soot damage. Fire patterns indicated the fire melted the plastic area around the heater core and fan area for the heater and defroster. There was powder from a fire extinguisher covering the dash and dog house area.

The fire had just penetrated the interior area through the heater and defroster area. The plastic that had encased the heater core had started to melt and that allowed the fire to enter the interior of the LLV.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment was observed with moderate fire damage. The driver's side contained the brakes master cylinder, battery, alternator, rubber and plastic components and the majority of the electrical conductors within the compartment. The ignition coil and fuel lines were also on this side. However, this side of the compartment sustained mostly minor fire damage. Most of the components were observed to be intact with very little melting. Fire patterns indicated that the moderate damage to the rear of the engine compartment on the mail side of the LLV, including the radiator, fan blades, pulleys and hoses were caused by radiated heat originating from the rear of the engine compartment. No evidence was observed of the

fire originating within the brakes, wheel hubs or tires in the area of the engine compartment.

We found a damaged area on the upper radiator hose that is consistent with a failure under pressure. This would have caused the “pop” that was reported and the liquid on the plug wires could cause the engine to shake as it caused misfires. The driver did not open the hood and check, but did see smoke coming from between the tires. They then started the LLV back up and drove to the post office a few miles away.

The battery for the vehicle was located at the front driver’s side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be melted by fire, however, intact; no adverse electrical activity was observed. The battery cables had been cut presumably by the fire department during suppression. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range. The radiator was checked and no antifreeze was detected.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head. All four tires were intact.

Fuse Panel Inspection:

The fuse panel positioned behind the instrument panel in the dashboard on the driver’s side sustained no fire damage. No evidence of adverse electrical activity was noted. The respective wiring harness associated with the fuse panel was inspected and did not reveal any unexpected damages from a fire with this intensity.

Area of Fire Origin:

The area of origin was determined to be the rear of the engine compartment, along the bulkhead/dashboard on the mail side of the engine.

Potential Contributing Factors:

A review of the USPS service records revealed that the last service had been conducted on LLV 4313616 on May 17, 2019, approximately 2 months before the fire.

Evidence Collected:

No evidence was collected from the LLV.

Interviews:

After multiple attempts, we did not interview the postal carrier that was operating the LLV at the time but, relied on the written statement provided.

Service Records:

Service records going back 90 days were obtained and reviewed. There was nothing documented that was done to the LLV that may have contributed to the upper radiator hose failure.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jimmie L. McCants

Jimmie L McCants, NAFI - CFEI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1
Front of LLV.



Photograph 2
Rear of LLV.



Photograph 3

Right side of engine compartment.



Photograph 4

Top of engine.



Photograph 5

Left side of engine compartment.



Photograph 6

Origin area.



Photograph 7
Front of engine.



Photograph 8
Damage to upper hose.



Curriculum Vitae



Jimmie L. McCants II, CFEI

Fire Consultant
Fire Division

Background

With 22 years of fire investigation experience and 26 years of law enforcement experience, Mr. Cants is uniquely qualified to work the most complex fire losses. He is a certified fire and explosion investigator (CFEI) through the National Association of Fire Investigators as well as a certified arson/explosive investigator through the Robert Presley Institute of Criminal Investigations. He is also a licensed private investigator in the state of California.

Mr. McCants has investigated over 3,000 fires during his career, including numerous high-profile fires and several fatal fires. He served as a lead investigator for a multi-county fire investigation unit in California and also examined bombing incidents throughout northern California. Because of his past professional experience as a detective, he is well-versed in taking statements, collecting and preserving evidence, and identifying the warning signs of arson and possible insurance fraud.

On-scene experiences with structural fires and explosions for various types of occupancies have provided him with a working knowledge of building construction, fire behavior, and post-investigation techniques for analyzing damages and fire cause and origin. His experience extends to residential, commercial, marine, automobile, and heavy equipment investigations.

Contact Information

(925) 677-7439

jmccants@rimkus.com

5099 Commercial Circle,
Suite 100
Concord, CA 94520



Rimkus Consulting Group, Inc.
7851 Woodland Center Boulevard
Tampa, Florida 33614
Telephone: (800) 498-3060
Certificate of Authorization No. 8301
Certification Expiration Date February 28, 2021

June 25, 2019

Re: RCG File No: 100003733
LLV Number: 4313665
Inspection Location: 19101 Cortez Blvd. Brooksville, Florida
Subject: Preliminary/Final Report

Dear,

Rimkus Consulting Group, Inc. was retained on May 22, 2019 to examine US Postal Service LLV 4313665 that was involved in a fire related incident. The vehicle was examined at the USPS Post Office on located at 19101 Cortez Blvd. Brooksville, Florida. The fire incident location reportedly occurred on May 17, 2019 at 4152 Nancy Creek Road in Brooksville, Florida.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses, obtained and reviewed first responders report on May 24, 2019. Our work to complete this assignment was performed by Thomas W. Young, VP Fire Division, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. An analysis of the observable fire patterns and physical evidence indicated that the general area of fire origin within the engine compartment was on the driver's side of the engine compartment near the fire wall with indications of the origin being in and around the fuel delivery system.
3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the damage.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed in the engine compartment and the mail compartment. Total mass loss was observed to the body composite materials including consuming the windshield, engine hood assembly, dashboard, and multiple engine components. There was no outward evidence to indicate that the LLV had recently been involved in a collision.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage to 90% of the vehicle with extension into to the cargo area. The most severe fire damage and material mass loss was observed within the engine compartment, with collateral damages to the front-end assembly, dashboard area, firewall, steering wheel assembly, and driver's seat.

The most severe fire damage was observed at the bulkhead, dashboard, windshield, and steering column. The burn patterns observed to the interior area progressed upward and outward from the engine compartment. After a review of the progression of the burn patterns, it was determined the fire progressed from the engine compartment into the mail side compartment through the design openings in the bulkhead and subsequent failure of the windshield. A distinct "U" shaped fire pattern was identified at the bulkhead adjacent to the fuel delivery system.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with an inline four-cylinder gasoline engine. Severe fire damage was observed throughout the engine compartment including mass loss to the belts, hoses, wiring harnesses, and multiple components. Electrical distribution sustained severe fire damage. Due to the severe fire damage and mass loss, the electrical wiring and wire harnesses were visually inspected and could not be eliminated as a cause of the fire. The remains of the fuse box/panel and related trace, light switch and auxiliary power port (cigarette lighter) were x-rayed in

part to complete the casual factors potentials. The fuel system was examined and found to be severely damaged and total material loss to several components. The fuel filter was mounted to the frame rail mid-ship and was in pristine condition. Due to the severe fire damage and materials loss to the fuel system, a failure to the fuel system could not be eliminated.

The battery for the vehicle was located at the front right side of the engine compartment and had severe fire damage to the battery. The battery, the battery terminals and battery cables were examined. While the damage was severe, there was no indication of arcing or any unexpected anomalies.

The transmission fluid, was observed to be within their normal operating range; however, water and debris did appear to be in the fluids. The remaining fuel and air delivery system was inspected and revealed severe fire damage to the top portion closest to the bulkhead/firewall. Due to the severe fire damage, the associated fuel assembly and related delivery system could not be eliminated as a cause of the fire.

The ignition coil, ignition module, and wiring assembly were examined and observed with moderate fire damage to the upper areas. Fire patterns indicated that the seated damages were above this area and towards the rear of the upper portion of the engine.

The main power supply cable from the battery to the starter and alternator was inspected. It was concluded while sustaining thermal deformation to the outer insulation from the fire no adverse electrical activity at the connection terminals at the battery and at the starter or alternator were observed.

An overall inspection of the engine block was conducted. No abnormal engine block damage was observed. During this inspection both oil sample and oil filter were recovered for analysis. The engine oil sample was contaminated with water due the vehicle being left open to the environment as well as additional water being added during fire extinguishment. The engine oil and oil filter was submitted for additional analysis by FAST laboratory. The results were mild contaminants or wear metals nothing considered abnormal.

An examination of the progression of the burn patterns and severe fire damage was conducted. Based on the fire patterns observed, the rear top side of the engine within the engine compartment was determined to be the area of origin. However, due to the severe fire damage and component material loss, the specific component failure analysis could not be further assessed.

Undercarriage Inspection:

Examination of the undercarriage revealed associated fire damage to the front end of the vehicle due to fall down of burning components within the upper portion of the engine. No fire damage was observed to the rear areas of the undercarriage. The LLV

was mounted on a GM frame. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact, and the transmission did not reveal any leak indications. The fuel filter located along the frame rail and related rigid supply lines were in pristine condition, the fuel filter was intact and free of any damage. The flexible supply hose from the frame rail rigid lines to the rigid lines routed to the fuel system above to the engine were intact and no anomalies were noted to the flex lines.

Fuse Panel Inspection:

Recovery and inspection of the fuse panel revealed severe fire damage to the panel and all the fuses. The fuse panel and headlamp switch were x-rayed for additional data to evaluate potential abnormalities. There were no apparent anomalies in the remaining portions of those devices.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated within the engine compartment on the rear top side of the engine. The specific concentrated damages were to the fuel delivery connections and associated distribution collaterally affecting the multiple combustible components in the engine compartments surrounding this area. The specific connections and related fuel systems were not present or had been consumed consequently a more in-depth analysis of the fuel delivery system was ineffective.

Contributing Factors:

The closest prior repair to the fire incident was documented on 04/26/19 work order 26035458. This was performed by an outside vendor "Three Brothers". The odometer reading at that time was 166,769. We have not received any confirmation as to what those repairs were specifically.

A loss site visit was attempted where the vehicle had burned and was recovered however, it was not apparent from the road where the vehicle incident had occurred. It appears that this specific area had no street mailboxes and the carrier would drive off the main road back into rural private property to deliver the mail. The primary road at this location appeared well maintained without pot holes or other major driving hazards. Due to the private property restrictions the actual loss site and the off-road route to the delivery points was not observed.

The Hernando County Fire Department Fire Incident Report # 19-12579 indicated they had received the incident at on 05/17/2019 at 10:41. Within the summary, they advised that upon their arrival 10:52 (11 minutes after receiving the call) the vehicle was fully involved with fire upon their arrival. The carrier stated to the first responders that the

vehicle shut down and she noticed fluids leaking down underneath just prior to the fire. Their cause was classified as undetermined.

Evidence Collected:

There were five pieces of evidence collected.

- Engine oil sample
- Oil filter
- Fuse box
- Other electrical components
- Light switch assembly

Interviews:

On May 24th, 2019, an in-person interview was conducted with the carrier based out of the Brooksville Florida Main Post Office. Ms. reported the following information:

The LLV reportedly was being driven at the time of the fire and the carrier reported that the vehicle had shut off. The carrier stated she was able to re-start the vehicle once and begun to drive it. The vehicle then shut off again, the carrier got out of the vehicle and observed fire dripping down underneath the vehicle. The carrier noted no abnormal odor, or other operability issues prior to the fire occurring. Both the carrier and Post Master, Mr. also additionally added that the vehicle had a similar issue the day before and was repaired by the "Auxiliary VMF Staff, Mr. " at the main post office location in Brooksville FL. (no additional invoices or verbal confirmation on work performed from the technician has been received as of this report, we had requested for Mr. to call us to discuss further but at this juncture no discussion has occurred).

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service documents provided that would appear to have caused or contributed to the cause of the fire. Additionally, the repair made the day before the fire which involved the vehicle being towed while the vehicle was making deliveries due to a no start/stall condition indicated that the root issue may have been related the repair which was ineffective in resolving the issue. Without the additional information requested being provided for review the sequence of events and repair history is unknown at this juncture.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Thomas W. Young

Thomas W. Young, IAAI-CFI (V)
VP, Fire Division

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1
Front view of LLV.



Photograph 2
Front ¼ view mail side.



Photograph 3
Rear view.



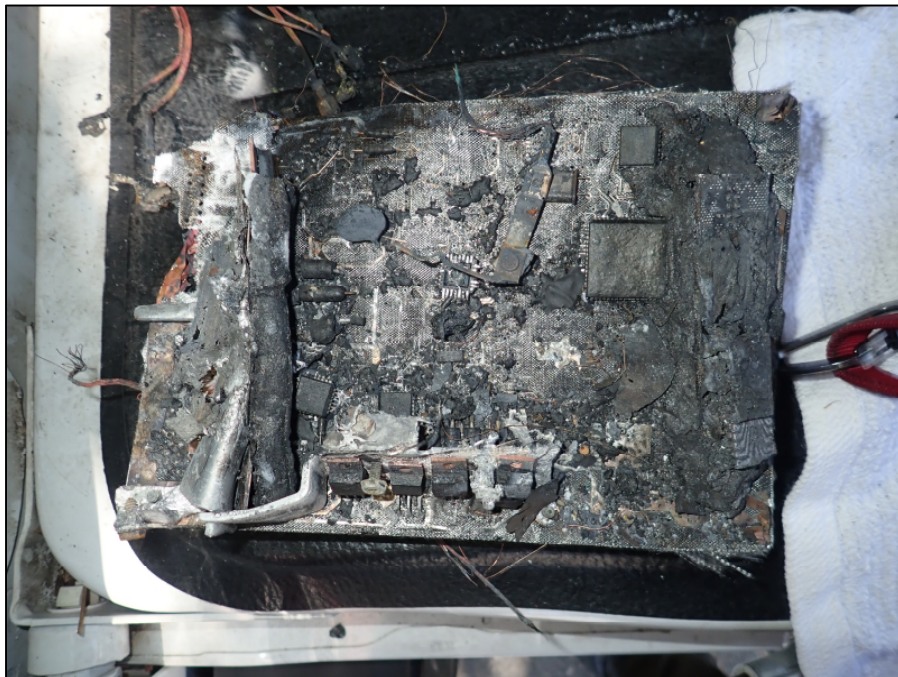
Photograph 4
Oil filter retained.



Photograph 5
Headlamp switch.



Photograph 6
Electrical components.



Photograph 7
Flex Fuel lines to crossover.



Photograph 8
Concentrated area of fire damage.



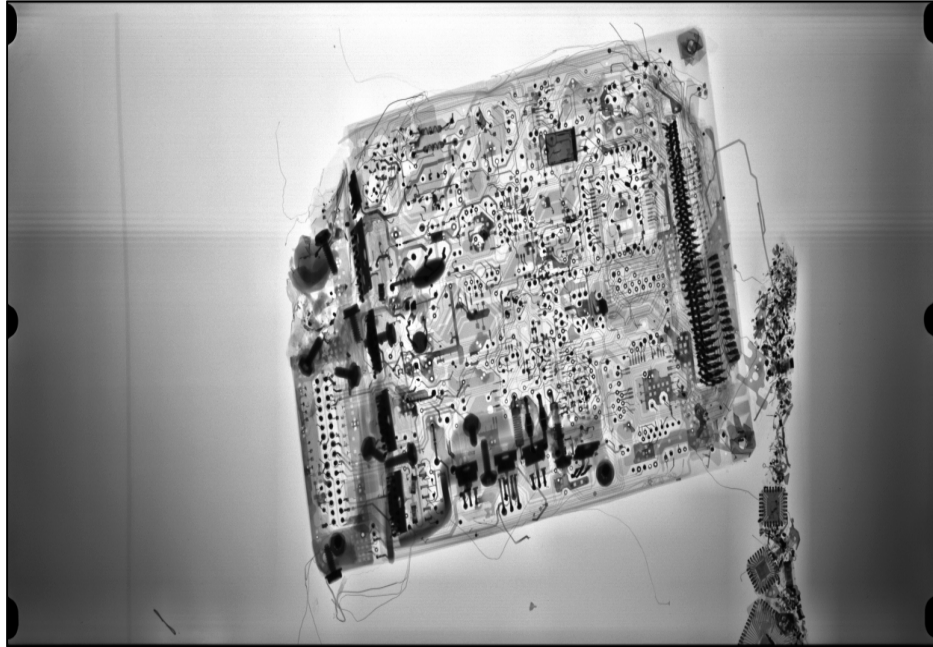
Photograph 9
Fuel filter.



Photograph 10
"U" fire pattern adjacent to fuel system.



Photograph 11
X-Ray image of electrical.



Photograph 12
X-ray image of head lamp switch.



Curriculum Vitae



Thomas W. Young, IAAI, CFI, (V) CFEI, CFII
Vice President
Fire Division (Officer)

Background

Mr. Young has completed and maintains state national and international certifications as Fire Investigator, Fire Investigator Instructor, Fire Inspector, Fire Officer, and Basic Fire Instructor. He has also authored fire safety articles in fire engineering publications, as well as firehouse and local municipality newsletters. He participates in, designs, and instructs educational seminars and continuing educational courses. He has conducted Live Burn Testing to include appliances, vehicles, and closed room fire tests and studies.

Mr. Young's professional career includes 27 years with St. Petersburg Fire and Rescue. In that capacity, he has been involved in many different emergency service positions including Fire Fighter, Driver Engineer, Station/Line Officer, Public Information Officer, Community Affairs Director, Deputy Fire Marshal and Fire Investigations Task Force Supervisor. As a Florida State Certified Fire Inspector, he oversaw code compliance, crowd management, fire safety analysis, special events, safety management, commercial and industrial fire emergency operations and reviewing fire contingency plans. Mr. Young supervised the origin and cause efforts for the St. Petersburg Fire and Rescue for over 10 years. He has testified as an expert witness in court cases and has testified before a Grand Jury. He has also been involved in special projects such as juvenile fire setters, an educational intervention program that through a committee based approach he was instrumental in developing. He has served as the department's shipboard firefighting Instructor. He has a strong marine, automobile and heavy equipment investigative background. Mr. Young has been recognized for his achievements by being the recipient of awards that include, Fire Officer of the Year, and The State of Florida's, Florida Fire Marshals Public Educator of the Year.

Currently, Mr. Young oversees the fire investigation efforts, which

Contact
Information
(813) 289-3060
twy@rimkus.com

7851 Woodland Center
Blvd.
Tampa, FL 33614

include training, hiring, and supervising a team of highly trained and experienced fire consultants. He maintains state private investigator licenses as the Business and Compliance Manager in multiple states.



Rimkus Consulting Group, Inc.
92 South Street
Hopkinton, Massachusetts 01748
Telephone: (508) 620-2255

July 31, 2019

Re: RCG File No: 100007627
LLV Number: 4313721
VMF Location: 1800 Page Boulevard Springfield, Massachusetts
Subject: Preliminary/Final Report

Dear

On June 29, 2019, a fire involving USPS LLV 4313721 reportedly occurred at 76 Overlook Drive in West Springfield, Massachusetts. The vehicle was manufactured by General Motors in 1994 and was a Grumman model LLV-94-RH, VIN: 1GCBS1049R2919873.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Springfield, Massachusetts VMF located at 1800 Page Boulevard in Springfield, Massachusetts. In the course of our work we inspected, photographed, and reviewed the vehicle repair and maintenance orders. The vehicle examination was conducted on July 11, 2019, by Fire Consultant Paul A. Doughty, IAAI-CFI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The vehicle sustained minor fire damage to the engine compartment from a fire originating within the engine compartment.
2. The area of origin was determined to have been on the mail side of the engine compartment, in the area of the power steering pump.

3. The power steering gear assembly was replaced on June 26, 2019, just before the fire on June 29, 2019. The power steering pump and hoses were replaced on July 9, 2018.
4. The specific ignition sequence and cause of the fire was the mechanical heat produced when the power steering pump drive pulley and shaft assembly continued to spin after the pump had seized. The heat then caused the tank containing the power steering fluid to melt and leak power steering fluid, which then ignited.
5. The driver's compartment and the cargo area did not sustain any fire or smoke damage.

Observations

Exterior Inspection:

The exterior examination of the vehicle began at the front exterior and continued in a counter-clockwise direction. The exterior of the vehicle was unremarkable and we did not observe any fire or smoke damage.

Interior Inspection:

The interior examination began in the driver's compartment and continued into the cargo area. The interior of the vehicle was unremarkable and we did not observe any fire or smoke damage.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L, four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a direct ignition system. The engine compartment sustained minor fire damage. The damage was limited to the area of the power steering pump.

The power steering pump and reservoir were mounted at the front of the engine on the mail side. The power steering pump was belt driven by a serpentine belt routed to the crankshaft pulley.

The fire damage was limited to the plastic tank containing the power steering fluid for the power steering pump and three conductors that passed near the power steering pump. There was some smoke staining observed on the underside of the hood above the power steering pump.

The power steering pump pulley and shaft assembly were not present during our examination and were reported to have fallen from the vehicle prior to the fire. We also

did not observe the serpentine belt or the bearing or seal for the pulley and shaft assembly. The area of the pump where the shaft entered the pump was significantly damaged and deformed from heat. The area of the pump where the pulley shaft entered the pump was distorted in an oblong shape and metal was also observed melted on to the inside of the pump where the shaft would have seated into the body of the pump.

We did not observe any leaks in the power steering high pressure hoses, the rack, or the low pressure return hose. The power steering pump reservoir was empty.

Three electrical conductors in the area of the power steering pump that were connected to a grounding bolt on the engine block were damaged. The damage included melted electrical insulation in the area of the power steering pump.

We also examined the battery. The negative conductor was disconnected from the battery and the positive cable was disconnected and removed from the engine compartment. The positive cable was observed on the floor of the driver's compartment and was intact and undamaged.

The remainder of the engine compartment was unremarkable and did not sustain any fire or smoke damage. We also did not observe any leaking fluids.

Undercarriage Inspection:

The undercarriage of the vehicle was examined and was unremarkable. No fire or smoke damage was observed to the underside of the vehicle. Fuel lines on the undercarriage were intact along the frame rail and to the fuel injection system. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

The fuse panel was positioned below the instrument panel in the dashboard on the driver's side and was unremarkable. We did not observe any fire or smoke damage, or any adverse electrical activity.

Area of Fire Origin:

The area of origin was determined to be the power steering pump.

Potential Contributing Factors:

A review of the USPS service records revealed that the power steering gear assembly pump was replaced on June 24, 2019, three days before the fire. I could not determine whether the power steering pump reservoir was properly filled at the time the fire

occurred. Further examination of the pump will be necessary to determine the cause of its failure.

Evidence Collected:

The power steering pump and reservoir were collected for any future examination.

Interview:

On July 15, 2019, a telephone interview was conducted with the vehicle operator. Mr. stated that on June 29, 2019, he was using a reserve USPS vehicle. He further stated he left the Agawam facility the day of the fire at 8:30 A.M. and had no vehicle issues until about 10:45 A.M. At that time he noticed that the power steering was not operating correctly. He continued his deliveries and then smelled smoke and heard a "clanking" noise coming from the engine. He then pulled over at approximately 11:00 A.M., shut off the engine and contacted his supervisor.

Service Records:

Service records going back 2 years were obtained and reviewed. Below is a listing of the most current repairs performed on LLV 4313721.

- 6/24/19 Preventive maintenance was last performed. The following items were also replaced including: front tires, front brake pads, front shocks, speedometer cable, and power steering gear assembly.
- 1/07/19 Unscheduled repair – window regulator
- 1/07/19 Scheduled preventive maintenance performed.
- 7/09/18 Scheduled preventive maintenance performed. The power steering pump, the power steering high pressure and return hoses were replaced.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Paul A. Doughty

Paul A Doughty, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

July 31, 2019
Rimkus File No. 100007627

Photograph 1
View of the front.



Photograph 2
View of the mail side.



Photograph 3
View of the rear.



Photograph 4
View of the driver's side.



Photograph 5

View of the engine compartment.



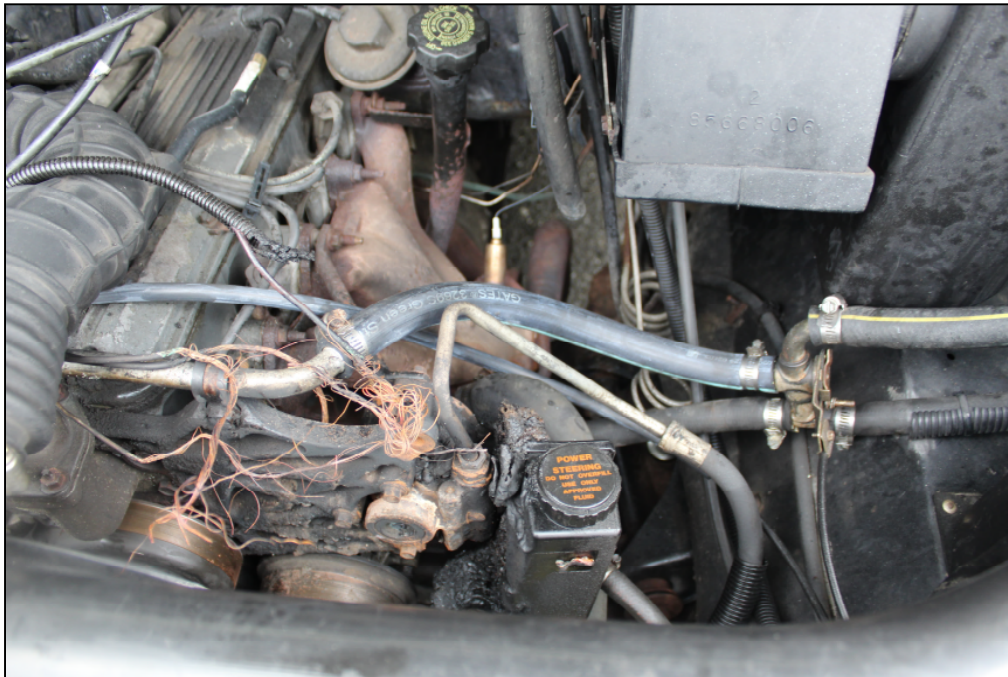
Photograph 6

View of the engine.



Photograph 7

View of the power steering pump.



Photograph 8

View of the pulley side of the power steering pump.



Photograph 9

View of the power steering pump reservoir.

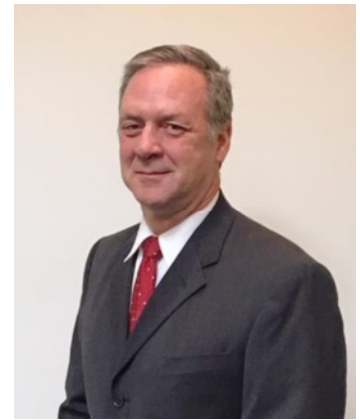


Photograph 10

View of the shaft entry point of the power steering pump. Note deformation.



Curriculum Vitae



Paul A. Doughty, Esq., CFI

Fire Consultant
Fire Division

Background

Mr. Doughty obtained his Juris Doctor from Roger Williams University School of Law and his B.S., Magna Cum Laude, in Fire Science from Providence College. Additionally, he is a graduate from the Providence Fire Department Fire Academy and the Providence Police Department Police Academy.

Mr. Doughty's professional career includes 30+ years with the Fire Department in the City of Providence, Rhode Island. During those years, his career progressed from firefighter to liaison officer to arson task force member to managing the activities and staff within the Arson Squad/Fire Investigation Division.

As the lead for the Arson Squad, his responsibilities included supervising investigative staff, managing fire and criminal investigations, conducting cause & origin investigations for commercial and residential fires. In addition, as a law enforcement officer, he executed arrest and search warrants for criminal offenses and assisted in the prosecution of those cases.

Mr. Doughty has testified in criminal and civil cases in federal and state courts. His law degree and legal practice experience compliment his investigative, expert witness and educator skills and capabilities.

Mr. Doughty is the recipient of awards that include Eta Lambda National Honor Society from Providence College, DAC Anthony V. Sauro Award, Heroic Action 2nd Class, Heroic Action 3rd Class, Meritorious Actions 1st Class, Unit Citations and the American Legion Medal of Valor from the Providence Fire Department and the Mayor's Award from the Providence Police Department.

Contact Information

(508) 620-2255
pdoughty@rimkus.com

92 South Street
Hopkinton, MA
01748



Rimkus Consulting Group, Inc.
1431 Greenway Drive, Suite 900
Irving, TX 75038
(877) 271-1168 Telephone
(972) 518-0011 Facsimile

Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2016

August 11, 2016

Re: RCG File No: 02213640
LLV Number: 4313791
VMF Location: 951 Bethel Road in Coppell, Texas
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 4313791 that occurred at 5200 Silver Trail in Grand Prairie, Texas, on May 19, 2016. In the course of the work, we examined and documented the fire-damaged vehicle and interviewed the mail carrier, on June 9, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 951 Bethel Road in Coppell, Texas. The work to complete this assignment was performed by Fire Consultant, Gary L. Cochran, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigation."

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at and around the fuel lines on the mail side of the engine compartment.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of the rubber fuel line become compromised and atomized gasoline vapors were ignited by the hot surface of the operating LLV.

Observations

Exterior Inspection:

Exterior examination of the vehicle revealed severe damage to the engine compartment. We observed the windshield on the left side of the vehicle was cracked.

Interior Inspection:

Interior examination revealed severe fire damage to the dashboard, firewall area, and wiring within the passenger compartment.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated on the passenger side, in the area underneath the engine. We observed severe fire damage to the engine compartment, which included all combustibles within the engine compartment and rubber brake line tubing in the area of origin. We examined the transmission fluid level and observed transmission fluid on the check stick but it appeared to have been burned during the fire. We were not able to examine the oil fluid level nor the power steering fluid level due to severe fire damage.

We examined the electrical system of the vehicle, and did not observe any adverse electrical activity within the electrical system. We examined the fire-damaged wiring harnesses within the vehicle and observed no adverse electrical activity. We observed that the battery had been severely damaged as a result of the fire, and one of the battery cables had been broken off prior to our examination as a result of the fire. The vehicle was equipped with a GM fuel filter system. The involved LLV was not equipped with a High Energy Ignition (HEI) Distributor.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of severe fire damage in the area of the fuel lines, vehicle underframe and topside of the transmission, as well as the top and sides of the engine. The involved LLV was mounted on a GM frame. We observed the area of origin on the top side of the transmission where the rubber supply and return fuel lines were attached to the metal supply and return fuel lines. We observed what appeared to be the return fuel line that had cracked or split, which during the time the

engine was running, sprayed fuel onto the hot exhaust and/or the hot components within the engine.

We observed two split or cracked rubber fuel lines still attached to the metal fuel lines from the fuel tank at the time of our examination.

Fuse Panel Inspection:

Examination of the fuse panel revealed that one 15-amp fuse had blown. This particular fuse powered the hazard lights, which were being operated at the time of the fire.

Area of Fire Origin:

The area of fire origin was determined to be on the underside of the engine compartment near the area of the fuel lines.

The point of fire origin was on a rubber fuel line(s) on the topside of the transmission area where the rubber hose(s) connected to the metal fuel lines.

There was physical evidence of rubber fuel line(s) revealing what appeared to be a split or crack in the rubber fuel line(s) at the fitting.

Contributing Factors:

During our examination, we determined that the rubber fuel line(s) developed a split or crack from the rubber line, causing fuel to spray onto the hot engine surface and/or hot exhaust system, causing the fuel to ignite.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interviews:

We interviewed the mail carrier, who stated that he started his mail route approximately between 1 and 1.5 hours prior to the fire. He conducted his morning safety check of the vehicle, which checked out fine at that time.

During his route, he noticed the vehicle idling rough and at times it would be sluggish to get any power. The vehicle did not want to stay running, and he would have to keep accelerating the engine, to keep it going. He noticed over a period of the last couple of weeks, a very pungent smell (exhaust smell), and it would burn his eyes.

He stated that on the day of the fire, the transmission would not shift correctly and would bind up. He heard a loud spew sound in the engine compartment and

immediately saw flames in the engine and passenger compartments (left side), in the firewall area. He immediately exited the vehicle and called 9-1-1 and his supervisor.

The Grand Prairie Fire Department arrived, and extinguished the fire.

Service Records:

A review of the service records for the involved LLV was conducted and there were no recent repairs or maintenance reported that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gary L. Cochran

Gary L. Cochran, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 11, 2016
RCG File No. 02213640

Photograph 1

Front view of LLV, with fire-damaged engine hood and windshield.



Photograph 2

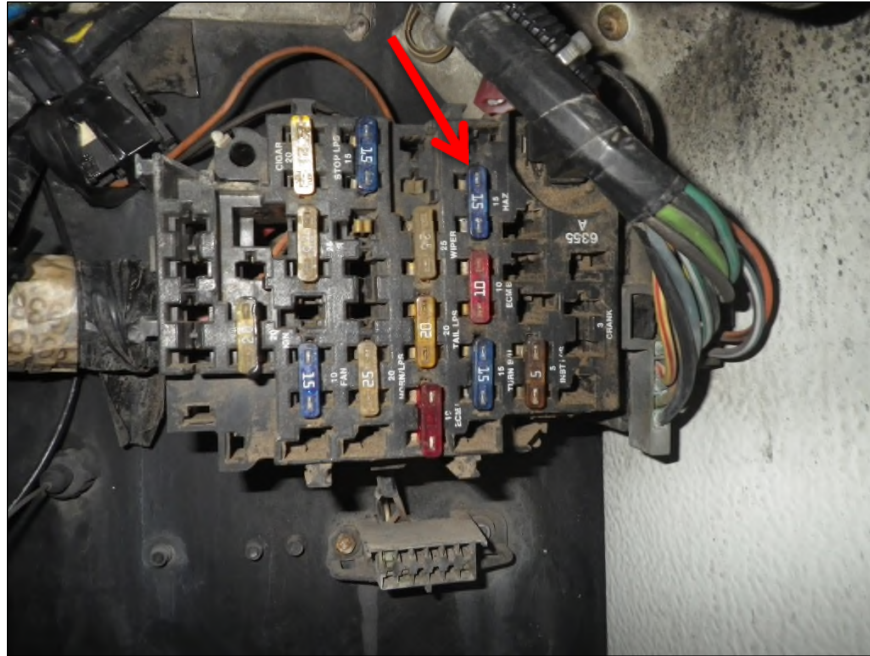
View of fire damage to underneath dashboard area.



August 11, 2016
RCG File No. 02213640

Photograph 3

View of fuse panel. Arrow indicates 15-amp fuse (hazard lights) to be the only blown fuse in the panel.



Photograph 4

View of fire-damaged engine compartment.



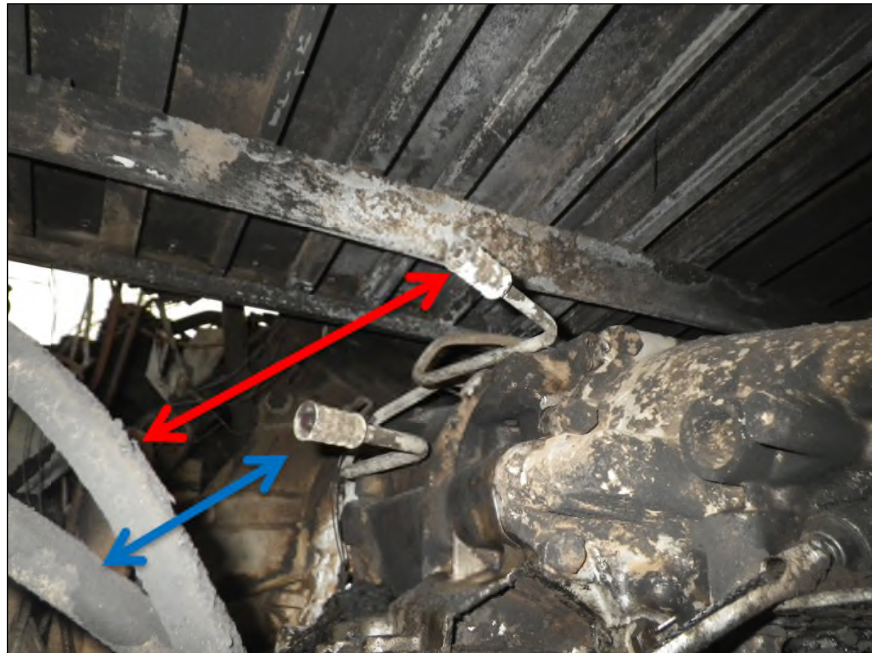
Photograph 5

View of rubber fuel line, which appeared to have been cracked or split prior to the fire.



Photograph 6

View of fire and heat damage to the metal frame of vehicle, above area of origin. Also view of two metal fuel lines and two rubber fuel lines that were connected to the metal fuel lines prior to the fire.



August 11, 2016
RCG File No. 02213640

CVs



**GARY L. COCHRAN, IAAI-CFI, NAFI-CFEI & CVFI
FIRE CONSULTANT**

Mr. Cochran has more than 30 years of experience in fire service. He has actively served as a Fire Investigator for two separate municipalities, and has served as an active member of the Tarrant County Fire/Arson Investigator's Association and most recently with the Grapevine Fire Department, Texas, as the Fire Code Enforcement Officer and Fire Investigator. He was also the Fire Code Enforcement Officer and Fire Investigator for the Town of Westlake, Texas. Mr. Cochran has extensive training in fire and criminal investigations, as well as hazardous material, nuclear, chemical, and biological and EMS incidents. He is certified through the International Association of Arson Investigators as a Certified Fire Investigator (IAAI-CFI) as well as the National Association of Fire Investigator as a Certified Fire and Explosion Investigator (NAFI-CFEI) and Certified Vehicle Fire Investigator (NAFI-CVFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Fire Protection Technology, Tarrant County College
Fire Service Administration, Weatherford College
Occupational Safety & Health, A.A.S., Columbia Southern University
International Association of Arson Investigators (IAAI), Texas Chapter, 2007 - Present
International Association of Arson Investigators (IAAI), 2007 - Present
International Association of Fire Fighters (IAFF)
National Association of Fire Investigators (NAFI), 2005 - Present
Texas Firefighters Association, 1987 - Present
Tarrant County Fire and Arson Investigators Association (TCFAIA), 2005 - Present
North Texas Fire Investigators Association (NTFIA), 2008 - Present

SPECIALIZED EDUCATION

Complex Arson Investigation Techniques for the Insurance Industry (IAAI) 2014
A.A.S. - Occupational Safety & Health, Columbia Southern University 2012
Texas IAAI Arson Conference, Austin, TX 2012
Pate Hands-On Vehicle Fires – Tested 2012
CVFI (NAFI) - Tested 2012
Texas IAAI Arson Conference, Austin, TX 2011
NFA – Forensic Evidence Collection, Emmitsburg, MD 2011
South Texas Arson Conference, South Padre, TX 2010
NFA – Fire/Arson Origin and Cause Investigations, Emmitsburg, MD 2010
NFA 25–Inspections, Testing and Maintenance of Water Based Fire Protection Systems, Houston, TX 2010
NFPA 72 - Inspections Testing and Maintenance of Fire Alarms, Houston, TX 2010
East Texas Arson Seminar, Longview, TX 2009
Certified Fire Investigator (IAAI-CFI) Tested 2009
Legal Aspect of Fire Investigations, North Richland Hills, TX 2009
East Texas Arson Seminar, Longview, TX 2008
NFA – Developing Fire & Life Safety Strategies, Emmitsburg, MD 2008
NFA – Plans review for Inspectors, Emmitsburg, MD 2007
TCLEOSE Basic Police Officer 2007
Intermediate Fire/Arson Investigator 2007
Intermediate Fire Inspector 2007
IAAI Texas Chapter Arson Seminar, Austin, TX 2007
TEEX – Courtroom Preparation for First Responders, Benbrook, TX 2006
Certified Fire and Explosion Investigator (NAFI-CFEI) Tested 2006
Advanced Firefighter 2005
Juvenile Fire Setter Intervention Specialist I & II Tested 2005
IAAI Texas Chapter Arson Seminar, Austin, TX 2005
Hazardous Material Technician School, Dallas, TX 2000
Paramedic School, Hurst, TX 1985
Basic Firefighter School, Bedford, TX 1983



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
92 South Street
Hopkinton, Massachusetts 01748
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

February 6, 2019

Re: RCG File No: 44804142
LLV Number: 4314004
VMF Location: 4 East Central Street Worcester, Massachusetts
Subject: Preliminary/Final Report

Dear

On January 3, 2018, a fire occurred involving a vehicle LLV 4314004 owned and operated by the USPS. The loss location was reported to be 254 Hall Street in Dunstable, Massachusetts. The vehicle was located and inspected at 4 East Central Street in Worcester, Massachusetts. Rimkus Consulting Group, Inc. was retained to determine the origin and cause of the fire. Our inspection of vehicle occurred on January 16, 2019.

In the course of our work, we inspected and photographed the vehicle, reviewed the work order history and interviewed the carrier. Our work to complete this assignment was conducted by Fire Consultant Scott S Popovich, IAAI-CFI (V). This report was technically review by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment in the area of the bulkhead on the left (mail) side of the vehicle.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a leak in the fuel injector throttle body and the atomized gasoline vapor coming in contact with a competent ignition source, in the immediate vicinity of the fuel lines or a hot surface ignition of the accumulation of engine fluids on within the engine compartment.

Observations

Exterior Inspection:

The examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left refers to the mail side. We observed movement and intensity fire patterns on the vehicle indicating a fire originating in the engine compartment. The windshield was missing and the frame melted due to thermal conditions. The window glass was all missing due to thermal conditions. The roof above the driver's seat and the "A" post were consumed by fire. Parts of the fenders below the "A" post were consumed by fire on the both sides of the vehicle.

The rear slide up cargo door was mostly consumed by the fire. The LLV number was verified from markings by the rear cargo door. Movement and intensity fire patterns on the mail side of the vehicle indicated a fire originating in the engine compartment of the vehicle and moving outward's towards the interior and cargo compartment. The rear tires were intact and inflated, the two front tires were deflated and fire damaged. A directional burn pattern was observed on the engine compartment hood. We observed mass loss of the hood on the mail side of the vehicle. There was no evidence to indicate that the LLV had recently been involved in a collision.

Interior Inspection:

The interior was inspected. The inspection began at the rear of the vehicle in the cargo compartment. Some fire damaged mail was observed on the floor of the cargo area. We did not observe any items of evidentiary value in the debris. Movement and intensity fire patterns on both side walls indicated a fire progressing from the front of the vehicle to the rear. The plastic items within the cargo area were entirely melted due to thermal conditions. The data plate was not observed on the cargo wall of the vehicle. The driver's seat cushioning material was completely consumed by fire. The debris in the interior was systematically delayered. We did not observe any material with evidentiary value in the debris. The electrical conductors were examined in the interior. We did not observe any evidence of abnormal electrical activity or anomalies in the conductors.

Most of the combustible materials located within this area were consumed by the fire, including the fuse panel and various electrical conductors in the dashboard area on the driver's side. Fire patterns indicated this was the result of the fire's extension from the engine compartment near the bulkhead/dashboard on the mail side. The most severe damage was observed on the mail side of the compartment, where the bulkhead had completely burned through from the direction of the engine compartment. The bulkhead was mostly intact on the driver's side.

The bundled wiring harnesses on the driver's side connecting from the fuse panel towards the Engine Control Module (ECM) sustained severe fire damage. The ECM had been positioned in the center of the dash and was observed with severe fire damage. The burn through hole in the bulkhead was observed to the left of the ECM. The remnants of an electric fan was found in the fire debris along the burned through area of the bulkhead.

Engine Compartment Inspection:

The engine compartment was conducted. The vehicle was equipped with a GM 2.5L four-cylinder engine with fuel injection and a standard ignition coil. The engine compartment was observed with severe fire damage. The engine hood was consumed by the fire. The battery was mostly consumed by the fire. The electrical conductors near the battery and in the engine compartment were examined and we did not observe any abnormal electrical activity or anomalies. The fire had consumed the aluminum fire wall when the fire progressed from the engine compartment of the vehicle to the interior of the vehicle. Most of the plastic, rubber and soft metals of the engine compartment had been consumed by the fire. Based on the fire patterns within this area and witness accounts, the engine compartment area was the area of the fire origin.

The driver's side contained the brakes master cylinder, battery, alternator, rubber and plastic components and the majority of the electrical conductors within the compartment. The ignition coil and fuel lines were also on this side. However, this side of the compartment sustained less severe fire damage than the mail side.

Fire patterns indicated that the severe fire damage to the front of the engine compartment, including the radiator, fan blades, pulleys and hoses were caused by radiated heat originating from the center and bulkhead area of the mail side. No evidence was observed of the fire originating within the brakes, wheel hubs or tires extending into the area of the engine compartment.

The majority of damage to the engine compartment occurred on the mail side between the rear of the engine block and along the bulkhead/dashboard. Fire patterns indicated this was the area of origin. Various conductors and switches connecting to the mail side headlights, flashers, heater and fan blower motor were located in this area and were

observed with severe fire damage and mass loss. The spark plugs, plug wires and rubber boots were located a little further towards the front of the engine compartment and were intact, except the plug wires had apparently been consumed by the fire. The fuel lines came up along the rear of the engine and turned to the driver's side of the engine compartment. The fuel lines were observed with severe fire damage and mass loss in this area. Fire patterns indicated the fire originated further to the mail side along the bulkhead where they extended into the mail side of the operator's compartment.

The battery for the vehicle was located at the front driver's side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be severely damaged by fire however intact; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle, except for a limited area below the rear of the engine compartment that appeared to have been caused by drop down from above. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head. All four tires were intact.

Fuse Panel Inspection:

The fuse panel positioned behind the instrument panel in the dashboard on the driver's side sustained severe fire damage and mass loss. However, no evidence of adverse electrical activity was noted. The respective wiring harness associated with the fuse panel was inspected and did not reveal any unexpected damages from a fire with this intensity.

Area of Fire Origin:

The area of origin was determined to be the rear of the engine compartment, along the bulkhead/dashboard on the mail side of the engine. Various electrical conductors in bundled harnesses were observed near this area with all of the insulation burned off. Some of the bundled harnesses came through the bulkhead from inside and under the dashboard. The electrical conductors could not be examined more closely due to the mass loss to the components, however no adverse electrical activity was observed to

the remaining conductors. Electrical components in this area were the conductors and switches for the mails side headlights, flashers, heater and fan blower motor.

The remaining fire patterns indicate that the point of fire origin was in the area where rubber fuel line connections were located adjacent to the engine exhaust manifold. The rubber fuel lines had been consumed by the fire.

Potential Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined due to severity of the damage, the lack of remaining physical evidence and the mass loss to the components within in the area of origin. Based on the observed fire patterns, a fuel leak that caused pressurized gasoline to spray onto the hot surface of the engine exhaust manifold could not be eliminated.

Evidence Collected:

No evidence was collected.

Service Records:

A review of the provided service records for the involved LLV was conducted. Per the maintenance records, the fuel pump was replaced in December, 2018. The last preventive maintenance was completed in December of 2018. There were indications of recent service and repairs that may have caused or contributed to the cause of the fire.

Interview:

On February 4, 2019, a telephone interview was conducted with the driver of the vehicle. Mr. reported the following information: He was the regular driver of the LLV since approximately 1995. A substitute drove his vehicle on Mondays which is his day off. The vehicle had just been returned from the VMF for regular maintenance. He was out for a delivery at 254 Hall Street in Dunstable, Massachusetts. The vehicle had been running for about 45 minutes. He shut the vehicle off to make the parcel delivery. When he returned, he tried to start the vehicle. The LLV would try and start but would not get going. He started to see black smoke come from the hood. He heard what he described as a gurgling noise and then flames were coming from the center of the engine compartment. The vehicle had started up in the morning with no problems. He did notice a cleaning solution smell to the interior of the vehicle. The fire department arrived approximately 10 minutes after being called and extinguished the vehicle.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Scott S. Popovich

Scott S. Popovich, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

February 6, 2019
RCG File No. 44804142

Photograph 1

Front and Driver's side of the vehicle.



Photograph 2

Rear of the vehicle.



February 6, 2019
RCG File No. 44804142

Photograph 3

Mail side of the vehicle.



Photograph 4

Cargo area of the vehicle.



February 6, 2019
RCG File No. 44804142

Photograph 5

Engine compartment of the vehicle.



Photograph 6

Interior of vehicle.



February 6, 2019
RCG File No. 44804142

Photograph 7
Under carriage of vehicle.



Photograph 8
Mail side of the engine compartment.



February 6, 2019
RCG File No. 44804142

Curriculum Vitae



SCOTT S. POPOVICH, CFPS, CFEI, CVFI, FIT FIRE CONSULTANT

Mr. Popovich's professional career includes 25 years with the Woonsocket Fire Department in the city of Woonsocket, RI. In that capacity he has been involved in many different emergency services including Deputy Director of Emergency Management, Assistant Fire Marshal, Lieutenant and Firefighter. As a licensed state of Rhode Island Assistant Deputy State Fire Marshal his duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Popovich has a Master of Science in Fire and Arson Investigation from the University of New Haven with a heavy concentration in forensics and a Bachelor of Science in Public Administration from Roger Williams University. He maintains certifications as a fire investigator and fire inspector and has attended numerous classes at the National Fire Academy and the Rhode Island State Crime Laboratory.

Mr. Popovich was recently recognized for project development for the planning and execution of Emergency Response Training for CVS Corporate Headquarters in Woonsocket, Rhode Island.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

M.S. – Fire and Arson Investigation – University of New Haven, Connecticut
B.S. – Public Administration – Roger Williams University, Rhode Island
A.S. – Fire Science – Community College of Rhode Island

Licenses and Certifications

Fire Investigative Technician (FIT) by the International Association of Arson Investigators
Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) by the National Association of Fire Investigators
Certified Fire Protection Specialist (CFPS) by the National Fire Protection Association
Certified Fire Inspector (CFI) by the National Fire Protection Association
Certified Evidence Collection Technician (ECT) by the International Association of Arson Investigators
Licensed Emergency Medical Technician by the State of Rhode Island
Licensed Oil Heat Technician
Licensed Hoisting Equipment Operator by the State of Rhode Island
Licensed Private Detective in the State of Rhode Island

Professional Memberships

IAAI (International Association of Arson Investigators)
RIIAAI (Rhode Island Chapter of International Association of Arson Investigators) Board Member



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
7501 Quincy Street, Suite 160
Willowbrook, Illinois 60527
Telephone: (630) 321-1846

February 24, 2020

Re: RCG File No: 100025688
LLV Number: 4314060
VMF Location: 95 State Street Peoria, Illinois
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 4314060 with VIN 1GBCS1048R2920254. The vehicle was examined at the USPS Peoria Vehicle Maintenance Facility located at 95 State Street in Peoria, Illinois. The fire incident reportedly occurred at 1511 East Empire Street in Bloomington, Illinois on January 29, 2020.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on February 6, 2020. Our work to complete this assignment was performed by Fire Consultant David A. Mager, IAAI-CFI (V). This report and case were reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated on the driver side of the engine compartment at the ignition coil packs.
2. The specific ignition sequence was the ignition of plastic by the conductive heat from the overheated coil packs. The specific failure of the coil pack was not determined.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. We observed substantial fire damage to the engine compartment and interior area of the vehicle. There was large mass loss on the engine compartment hood near the center of the vehicle. There was mass loss of the bulkhead near the center of the vehicle. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. There were no indications the vehicle had been in an accident.

Interior Inspection:

Burn patterns indicated the fire entered the interior compartment from the engine compartment on the left side of the vehicle. Severe fire damage to the dashboard area.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L, fuel injected with 4 fuel injectors. The vehicle had high output ignition coil packs. The battery was intact but fire damaged. Burn patterns indicated the battery was attacked by the fire. We observed extensive fire damage to the right rear side of the engine. Burn patterns on the firewall indicated the fire extended up from the lower side of the right side of the engine. We observed localized heat damage to the ignition coil packs on the lower right side of the engine.

Undercarriage Inspection:

Examination of the undercarriage revealed no visible fire damage. The LLV was mounted on an AMC frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure up to where they entered the frame rail. The exhaust system was intact.

Fuse Panel Inspection:

The fuse panel was intact, however sustained some radiant heat damage.

Area of Fire Origin:

Based on the observed patterns of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated in the engine compartment at the right side of the engine.

Potential Contributing Factors:

Overheating of the ignition module and coil packs ignited surrounding plastics and wire insulation. A failure of the ignition coil packs were a contributing factor to the fire.

Evidence Collected:

The ignition module and coil packs were collected and retained at the Rimkus Charlotte office.

Witness Statements:

In an interview with the carrier provided the following information:

- She went out to start the vehicle about 7:05 A.M.
- She tried twice to start the vehicle with no success.
- The vehicle started on the third attempt and she depressed the throttle a little bit.
- She smelled a weird smell and turned the vehicle off.
- She turned the key to the "on" position and continued with her vehicle check.
- She turned the key off and went inside to report the smell.
- This was not her normal vehicle that she drove daily.
- She had not had any issues with the vehicle.

In an interview with Mr. provided the following information;

- He was leaving the parking lot about 7:20 A.M. and observed smoke coming from the vehicle located on the south side of the building.
- He observed black and gray smoke.
- There were flames coming out of the engine compartment near the windshield at the center of the vehicle.

- He observed flames under the engine as well.
- He stated that it smelled like electrical burning.
- He observed a liquid dripping from under the vehicle but stated that it was not on fire.
- He went inside and notified the post master who called 911.
- He left after reporting the fire to the post master.

In an interview with the Lead Auto Technician provided the following information;

- The VMF have observed several replacement ignition coil packs that have sustained melting.
- The replacement coil packs were purchased from Wheeler Brothers Inc.
- The coil packs are labeled as A/C Delco parts.

Service Records:

Invoice #184867 indicated that the ignition coil packs and ignition module were replaced on March 23, 2018.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Mager

David A. Mager, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

February 24, 2020
Rinkus File No. 100025688

Photograph 1
Overall view of LLV 4314060.



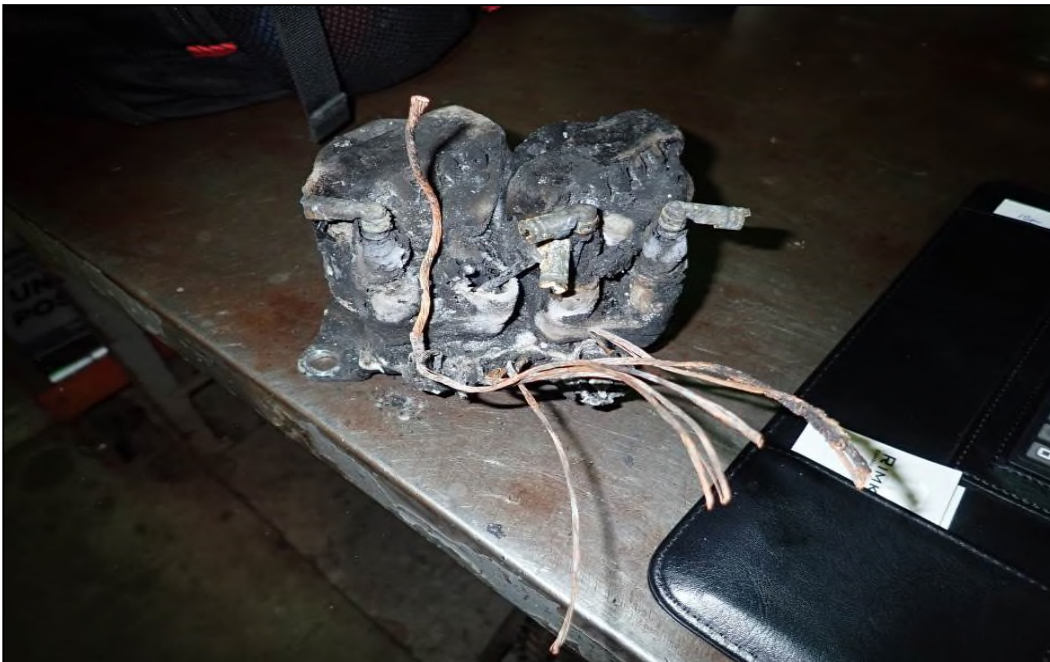
Photograph 2
Overall view of the engine compartment.



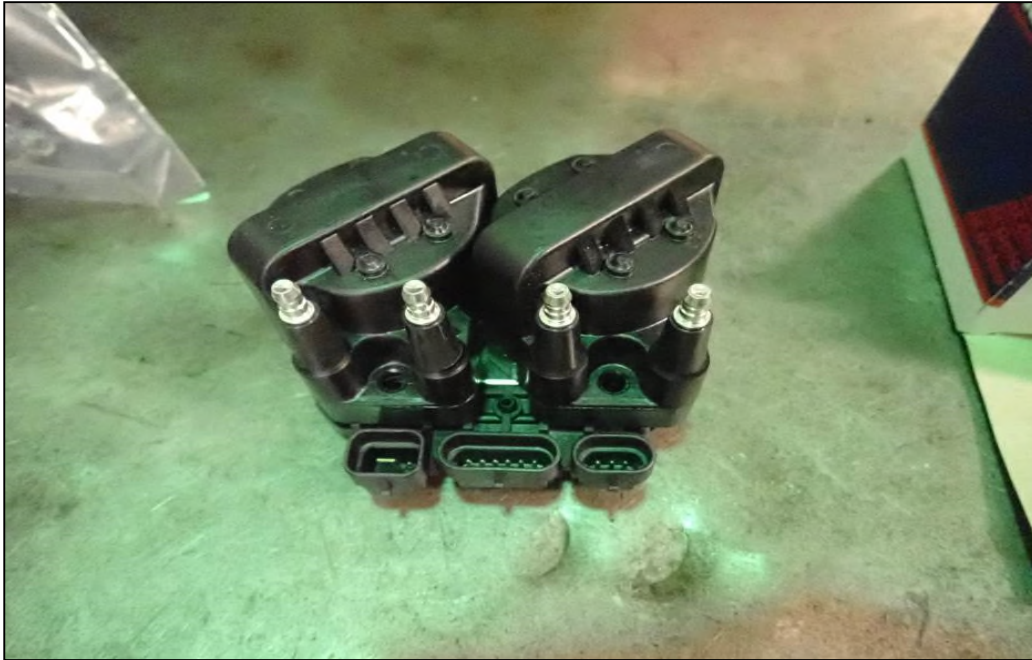
Photograph 3
Ignition module and coil packs.



Photograph 4
Ignition module and coil packs removed.



Photograph 5
Exemplar ignition module and coil packs.



Photograph 6
Passenger compartment of vehicle.



February 24, 2020
Rinkus File No. 100025688

Curriculum Vitae

David A. Mager, C.F.I. (V)

Fire Consultant
Fire Division



Background

Mr. Mager is an International Association of Arson Investigators Certified Fire Investigator, Illinois State Fire Marshall Office Certified Fire Investigator, Certified Fire Officer II, Hazardous Materials Technician “B”, and was an Illinois Dept. of Public Health Certified Paramedic. He is also a Certified Private Investigator in Illinois, Indiana, Michigan, Ohio, Minnesota, Iowa, Missouri, and Wisconsin.

Mr. Mager was a Deputy Fire Chief and had been the Training Officer with the Midlothian Fire Department in Illinois. He was an Assistant Team Leader for the Southwest Hazardous Materials Response Team and routinely responded to fire and hazardous materials incidents, investigated fires, and conducted life safety inspections within the municipality.

He has an extensive professional background in the areas of firefighting and fire investigations and has investigated over 1,000 fires. His professional experience includes fire and explosion investigations, fire protection and detection system inspections, as well as hazardous materials mitigations.

As an International Association of Arson Investigators Certified Instructor and a Certified Instructor II through the Illinois State Fire Marshall Office, Mr. Mager has conducted numerous live-fire training exercises for firefighters and fire investigators using authentic room furnishings, as well as classes on fire behavior and evidence preservation.

As a forensic investigator, he performs scene investigation and analysis of fire and explosion incidents, including origin and cause determination, analysis of products, and circumstances surrounding the initiation of the fire.

Contact Information

(630) 321-1846

damager@rimkus.com

7501 S. Quincy Street,
Suite 160
Willowbrook, IL 60527



Rimkus Consulting Group, Inc.
3620 Horizon Drive, Suite 200
King of Prussia, PA 19406
(888) 623-1460 Telephone
(610) 941-1288 Facsimile

February 17, 2016

Re: RCG File No: 47701739
LLV Number: 4314635
VMF Location: 1425 Crooked Hill Road in Harrisburg, Pennsylvania
Subject: Final Report

Rimkus Consulting Group, Inc. was requested to examine LLV 4314635, VIN 1GBCS1045R2920860. The vehicle was examined at the USPS Harrisburg, Pennsylvania VMF located at 1425 Crooked Hill Road in Harrisburg, Pennsylvania. The fire incident reportedly occurred near 385 Nye Road in Hummelstown, Pennsylvania on December 21, 2015.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on December 31, 2015. Our work to complete this assignment was performed by Fire Consultant Jonathan Sivils, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the interior operator compartment of the involved LLV.
2. Based on the damage and witness statements, it was determined that the fire most likely originated in the dashboard in or around the headlamp switch; however, the fire damage was too severe to make a conclusive determination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the fire damage and the lack of conclusive physical evidence remaining in the area of fire origin.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. Severe fire damage was observed to the front of the vehicle. The hood and roof along the front were consumed. All of the window glass in the vehicle was broken. The roof along the rear was intact, but the rear door was collapsed on top of the mail parcel area. The front left side tire was nearly consumed while the other three tires remained intact.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred to the dashboard area. The dashboard had melted and the majority of the electrical wiring and other components that were housed within the dashboard were severely damaged. The electrical wiring that could be examined did not display any physical evidence of adverse electrical activity. Further examination of the components and electrical wiring that would have been located within the dashboard area could not be examined due to the severity of the fire damage in the area and the lack of remaining physical evidence.

Engine Compartment Inspection:

The engine compartment was examined. Flame impingement damage was observed throughout the engine compartment with the most severe damage in the compartment located along the rear of the engine closest to the firewall. The plastic and rubber engine components were consumed. The air filter components were also consumed.

The fuel system was examined and revealed it to be the original GM fuel filter system which was severely damaged. The fuel lines were routed along the rear of the engine. The fuel filter was located just to the rear of the engine on the left side. The filter was intact but all fuel lines to the engine were consumed. The battery for the vehicle is located at the front right side of the engine compartment and had sustained severe fire damage and was nearly consumed.

Undercarriage Inspection:

Examination of the undercarriage revealed only minor distortion to the paint closer to the front indicating heat travel from the engine compartment area or front of vehicle. The frame rail components were the original GM frame and were undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed it was consumed by fire.

Area of Fire Origin:

It is our opinion, based on the observed patterns of fire damage, witness statements and a systematic evaluation of the remaining physical evidence that the fire originated in the dashboard area of the vehicle. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the damage and the lack of remaining observable physical evidence.

Contributing Factors:

An issue with the headlamp switch or the electrical harness that was routed in the area of origin could not be eliminated.

Evidence Collected:

No evidence was collected

Interviews:

On December 22, 2015, an interview was conducted with the driver of the vehicle. She reported the following information:

- On the day of the fire, she pulled up to deliver mail at three boxes.
- She saw small puffs of smoke come out of the vents.
- She turned the vehicle off and flames came out of the headlamp switch.
- She immediately called the post office to report the fire and have them call 911.
- She backed away from vehicle and within 1 to 1 ½ minutes, she states the vehicle was fully involved.

- No other issues or problems were reported with the vehicle on the day of the fire.

Service Records:

A review of the service records indicates that the last service prior to the fire was conducted at the VMF on December 18, 2015. The service work did not appear to involve any work related to the electrical components in the dashboard of the LLV. The mileage at the time of service was recorded as 139,477.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jonathan K. Sivils

Jonathan K. Sivils, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

February 17, 2016
RCG File No. 47701739

Photograph 1
Front right side view of vehicle.



Photograph 2
Front left side view of vehicle.



February 17, 2016
RCG File No. 47701739

Photograph 3
Left rear of vehicle.



Photograph 4
Right rear of vehicle.



February 17, 2016
RCG File No. 47701739

Photograph 5
Engine compartment



Photograph 6
Engine compartment



February 17, 2016
RCG File No. 47701739

Photograph 7
Dashboard area.



Photograph 8
Dashboard area near driver side.



February 17, 2016
RCG File No. 47701739

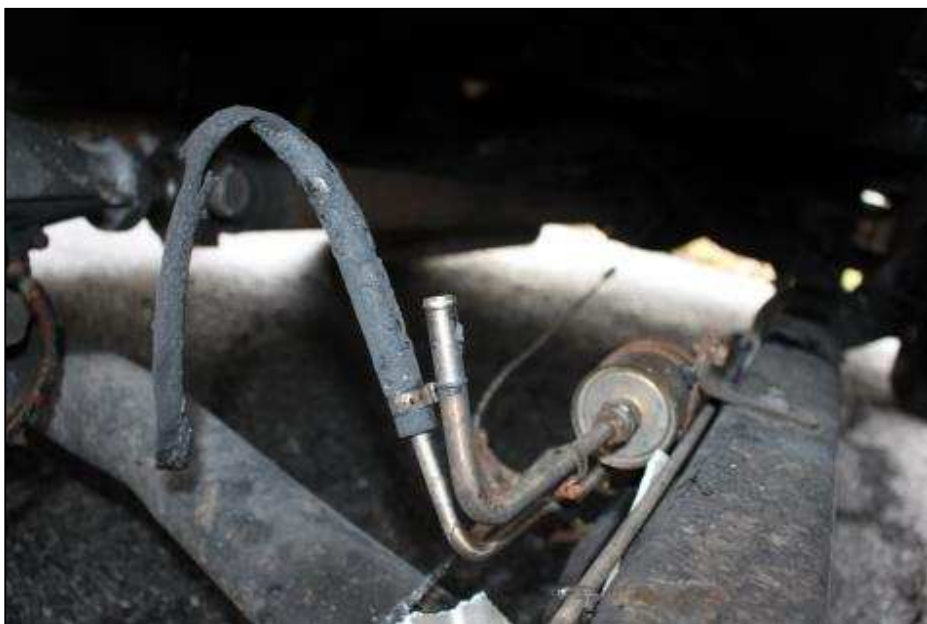
Photograph 9

Area above fuel filter. Bottom right of photo.



Photograph 10

Fuel filter and fuel lines.



February 17, 2016
RCG File No. 47701739

Photograph 11
Fuel lines.



February 17, 2016
RCG File No. 47701739

CVs



Jonathan Sivils, IAAI-CFI, FIT, CFEI Fire Consultant

Mr. Sivils is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, as well as a Fire Investigation Technician (IAAI-FIT) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). He also holds an Associate of Science Degree in Fire Protection Technology. In a career spanning more than 25 years in the fire service, he has investigated and determined the origin and cause of more than 800 fires, to include commercial structures, residential structures, vehicles, marine and heavy equipment. He has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Sivils is a court-qualified expert witness in Criminal and Civil proceedings. Mr. Sivils has extensive training in fire and criminal investigations.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S Fire Protection Technology – Americus University, Washington D.C. – 2002
Bucks County Fire Chiefs and Firefighters Association
Bucks County Fire Marshal Association
International Association of Arson Investigators
National Association of Fire Investigators
National Fire Protection Association
Pennsylvania Association of Arson Investigators

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2012 – 2015	Donan Engineering Company, Inc.
2007 – 2012	Bucks county Fire Marshal Office, Bucks County, Pa
2005 – 2007	U.S. Department Of Defense Fire and Emergency Services
2009 – 2010	NEFCO Fire Investigations, Philadelphia, Pa
2003 – 2005	U.S. Department of Homeland Security
1998 – 2003	U.S. Department Of Defense Fire and Emergency Services
1993 – 2010	Penndel Fire Company, Penndel, Pa



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
2677 North Main Street., Suite 300
Santa Ana, CA 92705
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

August 9, 2016

Re: RCG File No: 71804926
USPS LLV Number: 4314731
VMF Location: 1900 West Redlands Blvd. in San Bernardino, California
Subject: Final Report

On May 21, 2016, a fire occurred involving USPS LLV 4314731. The loss location was reported as "Rushmore Lane in Indio, California." LLV 4314731 was examined at the VMF located at 1900 West Redlands Boulevard in San Bernardino, California.

Rimkus Consulting Group, Inc. was retained to examine LLV 4314731, VIN 1GBCS1043R29220999 to determine the cause of the fire. This report and case was reviewed by Jack R. Kennedy III, Technical Fire Manager.

In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on June 3, 2016. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver, and documented the vehicle with photographs.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of origin could only be narrowed down to the mail side of the engine compartment.

3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the damage in the engine compartment and the presence of multiple potential ignition sources.

Observations

Exterior Inspection:

The vehicle sustained severe fire damage to the front/engine and driver/carrier compartments. The cargo compartment sustained moderate, primarily high-level fire damage.

The engine compartment hood and grill were destroyed and melted away by fire and heat. Both fenders were destroyed and the left fender was melted away by fire and heat above the left front wheel.

The operator compartment combustible components were generally consumed by fire, and the roof was melted away.

The cargo compartment sustained primarily high-level heat and fire damage. The roof remained intact, and exterior paint was unburned except at the upper front where it adjoined the operator compartment. The rear bumper was intact. The rear cargo door was cut open by firefighters to gain access to the fire.

The right and left front tires sustained relatively equal heat causing fire damage and mass loss from fire consumption. Both tires were deflated due to structural fire damage. The right and left rear tires were intact.

Interior Inspection:

The operator compartment was completely destroyed by fire, with only fragments of unburned mail remaining on the floor. Charred/burned mail was stacked on the left side. Fire patterns in this compartment were consistent with fire traveling from the engine compartment toward the rear.

The cargo compartment sustained diminishing fire damage from the driver/carrier section toward the rear. Heat discoloration and soot markings were found on the interior walls angled slightly upward to the rear cargo door. There was no indication of fire origin in this compartment.

Engine Compartment Inspection:

The engine compartment combustible components were all charred and/or consumed by fire. The greatest damage was in the area of the intake manifold and fuel rail/injectors positioned at the upper right side of the engine. The aluminum manifold

body was melted from fire and heat exposure. Fire damage generally diminished slightly away from this area to the remainder of the engine compartment.

Electrical wiring harness stranded copper conductors were melted from fire heat in the area of the intake manifold and fuel rail at several locations as follows:

- Between the firewall/bulkhead and rear of the manifold.
- Between the valve cover and manifold.
- Below the manifold.

This observation was an indication of high localized heat, not observed at other locations within the engine compartment.

The only evidence of electrical arcing was observed at the battery cable hot (positive) lead, approximately 10 to 16 inches from the battery post connector, located forward and below to the right of the intake manifold. This represented a potential source of ignition and was positioned within the ability to contact the steering column intermediate shaft.

The engine was reportedly a 2.2 liter, direct injection model, used only in the 1994 LLV model year, and there were no aftermarket systems or modifications made to the engine. The involved LLV was equipped with a GM fuel filter system. The engine was not equipped with a High Energy Ignition (HEI) Distributor.

Undercarriage Inspection:

No fire damage occurred to the undercarriage to the rear of the engine compartment.

Undercarriage fire damage was observed at the engine mount locations and forward. Evidence of fall-down fire was observed where carbonized remnants of molten plastic were adhered to lower components. There was no indication of fire below the engine from the bell housing to the rear.

The transmission was seeping fluid at the pan gasket, leaking transmission fluid residue on the pan and nearby components including the exhaust pipe cross-over section, located directly rear of the transmission. It appeared a sealant was applied to the transmission pan gasket in an attempt to provide a tight seal, reportedly contrary to recommended installation procedure. The exposed edges of the rubber gasket were unburned and flexible.

Transmission leakage was reportedly a continuous problem with this particular model year, according to technicians on-site during the examination.

There was no evidence of fire or fire origination at the undercarriage. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

All fuses were destroyed by the fire.

Area of Fire Origin:

The fire originated in the engine compartment, mail side.

Potential Contributing Factors:

Normal wear and degradation of components, including potential abrasion to the battery hot (positive) lead and failure of a fuel delivery component.

Circumstances and witness observations indicate an adverse electrical event was most probable, as opposed to a combustible or flammable liquid vapor ignition. Odor and smoke were first noted at the time of discovery and dripping/burning plastic was observed in the early stages of the fire.

Evidence Collected:

No evidence was collected.

Interview:

Carrier for USPS, provided the following information:

- He typically drives this LLV when servicing this particular rural route.
- The day of the fire, he drove the LLV from the USPS yard about 10 miles to his first stop.
- The LLV ran good, with no abnormal odors, vibrations or power loss.
- He stopped at a "CBU" (a cluster of many mailboxes) to deliver mail.
- He turned the engine off, got out of the LLV, and was between the LLV and the CBU facing away, inserting mail into the boxes.
- He was at the stop for less than three minutes.
- He noticed a slight odor of electrical or something hot, but had smelled this before in other vehicles, so he ignored it.

- Another vehicle was parked in front of his LLV while he was making the delivery. The driver came over to him and said there was smoke coming from his LLV engine compartment.
- He looked and saw smoke coming out around the edges of the hood. There were no flames yet.
- He called the office to report the problem, and got his wallet out of the vehicle.
- He backed away out into the street, and then saw fire dripping from the engine compartment to the street.
- He then called 911 to report a fire.

Service Records:

A review of the service records for the involved LLV did not indicate any repairs had been completed that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 9, 2016
RCG File No. 71804926

Photograph 1
Subject LLV 4314731.



Photograph 2
Engine compartment.



Photograph 3

Right side of engine. Battery hot lead arc and intermediate shaft (yellow arrows).



Photograph 4

Closer view of battery cable arc.



August 9, 2016
RCG File No. 71804926

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus North Carolina, PLLC
5900 Harris Technology Boulevard Suite P
Charlotte, North Carolina 28269
(704) 896-6227 Telephone
(704) 896-6228 Facsimile
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2019

November 27, 2018

Re: RCG File No: 47109069
LLV Number: 4314774
VMF Location: 2001 Dixiana Road Columbia, South Carolina
Subject: Preliminary/Final Report

Dear

Rimkus North Carolina, PLLC was retained to examine a vehicle fire involving LLV 4314774, with a vehicle identification number (VIN) of 1GBCS1047R29209566, that occurred on October 16, 2018. During the course of our work, we examined, documented, and photographed the fire damaged LLV and interviewed witnesses on November 1, 2018. The vehicle was inspected at the Columbia VMF located at 2001 Dixiana Road in Columbia, South Carolina.

Our work to complete this assignment was performed by Fire Consultant Van D. Tuley, IAAI-CFI (V). A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated within the engine compartment of the involved LLV.

2. The specific area of origin was at and around a battery cable routed directly below the power steering pump assembly that sustained an adverse electrical event.
3. The specific ignition sequence and cause of the fire was determined to be an adverse electrical event at the large diameter battery cable that was identified routed through a retaining P-clamp below the power steering pump. The cable exhibited physical evidence consistent with adverse electrical activity and the cable was severed at the retaining clamp. The retaining clamp exhibited physical evidence consistent with adverse electrical activity and arcing. The source of the fire's ignition was resistance heating of the battery cable caused by a direct short between the cable and the retaining ring.
4. Wear and degradation of components allowed an unfused adverse electrical event to develop at the battery hot lead where it was in direct contact with the retaining clamp below the power steering pump within the engine compartment.

Observations

Exterior Inspection:

For the purpose of this report, the right side of the vehicle refers to the driver's side of the vehicle, and the left side refers to the mail side of the vehicle. Severe fire damage was observed to the front of the vehicle. The grill area was severely fire damaged, with the most severe damage occurring to the left headlight area. The hood assembly was missing as was the windshield and framing around the windshield. The top of the vehicle had also been severely fire damaged, with the majority of top having collapsed into the cargo area.

Examination of the right side of the vehicle revealed severe fire damage from front to back. Severe fire damage was observed to the right front fender. The right front tire was severely fire damaged, with a portion of the burned tire still attached to the rim. Severe fire damage was observed to the upper portion of the driver's door frame as well as the upper portion of the cargo area. The right rear tire was still intact.

Examination of the rear of the vehicle revealed severe fire damage along the upper half vehicle. The rear door was missing.

Examination of the left side of the vehicle revealed severe fire damage to the cargo area, with a majority of the aluminum panel for the cargo area missing. The left door was severely fire damaged, and the left front fender was missing. The left rear tire was intact, but the left front tire had been consumed in the fire.

Interior Inspection:

Severe fire damage was observed throughout the interior of the vehicle. All combustible materials within the interior compartment had been consumed by the fire. The bulkhead between the engine compartment and interior compartment had been destroyed by the fire. The fuse panel that had been located near the bulkhead had also been destroyed. The aluminum dividing panel between the interior compartment and the cargo area was severely fire damaged. Severe fire damage had also occurred to the cargo compartment.

Engine Compartment Inspection:

This vehicle was equipped with a 2.2L fuel injected engine. Severe fire damage was observed throughout the engine compartment. Examination of the standard ignition coil revealed that it had sustained external heat damage, but for the most part it was intact and eliminated as the cause of the fire. The battery had been destroyed by the fire, and a few pieces of the battery cells had been placed in the interior compartment of the vehicle.

Examination of the battery cables revealed that the negative cable was intact, but the positive cable, which ran from the battery to the starter, was severely fire damaged in one area on the left side of the engine. The cable had been routed through an aluminum screw mount cable P-clamp, and a section of the cable was missing where it had passed through the cable P-clamp. The remaining ends of the cable had welded together. Examination of the cable P-clamp revealed that positive cable had arced through the back of the clamp. A small stranded electrical wire next to the cable P-clamp was also damaged. Severe oxidation was observed on the side of the engine where the positive cable had been routed through the cable P-clamp.

This area also coincides with the severe fire damage that was observed to the left front fender and left front tire.

Undercarriage Inspection:

Examination of the undercarriage revealed severe fire damage in the area of the engine compartment. The fire damage observed was the result of burning components from the engine compartment falling down and impacting the undercarriage of the vehicle.

Fuse Panel Inspection:

The fuse panel had been severely fire damaged. The fuses within the panel had been destroyed and could not be examined.

Area of Fire Origin:

The fire originated on the left side of the engine compartment, where the positive battery cable had been routed through an aluminum screw mounted cable P-clamp.

Potential Contributing Factors:

The cause of the fire was determined to be the result of the positive battery cable chaffing against the aluminum screw mounted cable P-clamp, exposing the cable to the cable P-clamp. The positive cable then arced to the cable P-clamp, ignited the insulation around the positive cable, and then progressed to other nearby combustible materials.

Evidence Collected:

No physical evidence was collected at the time of our initial examination.

Interviews

The driver of the LLV at the time of the fire incident, stated that she was driving the LLV when she heard two loud pops. She pulled the LLV to the side of the road, exited the LLV, and observed smoke coming from the engine compartment. She stated that the LLV was quickly engulfed in flames. Ms. Fulton stated that she had not noticed anything unusual prior to the fire incident, and the LLV seemed to be running fine.

Service Records

The provided service records indicated that the last preventative maintenance had occurred on August 16, 2018. The vehicle had also been serviced on September 4, 2018, and October 1, 2018, for fluid leaks. The last recorded mileage for the LLV was 238,668 miles. It is inconclusive if the maintenance performed contributed to the chaffing of the battery cable or the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NORTH CAROLINA, PLLC

Van D. Tuley

Van D. Tuley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

November 27, 2018
RCG File No. 47109069

Photograph 1

Front view of the fire damaged LLV.



Photograph 2

Driver's side of the LLV.



November 27, 2018
RCG File No. 47109069

Photograph 3
Rear view of the LLV.



Photograph 4
Mail side of the LLV.



November 27, 2018
RCG File No. 47109069

Photograph 5

Driver's compartment of the LLV.



Photograph 6

Cargo area of the LLV.



November 27, 2018
RCG File No. 47109069

Photograph 7

Engine compartment of the LLV.



Photograph 8

Right side of the engine compartment.



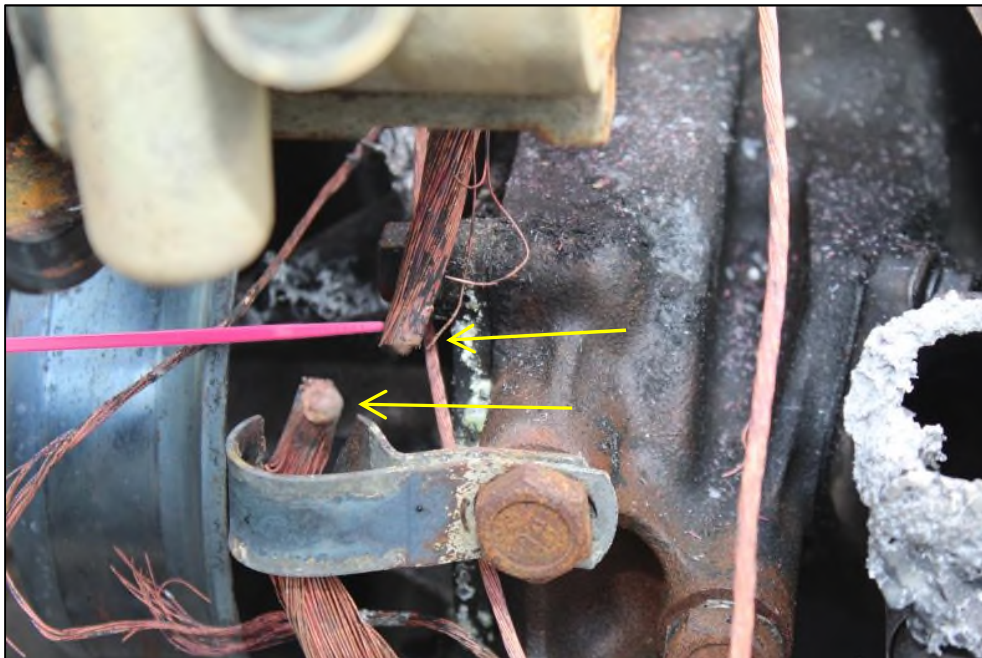
Photograph 9

Left side of the engine compartment.



Photograph 10

Damaged positive battery cable running from the battery to the starter.



Photograph 11

Damaged aluminum cable clamp that routed the positive battery cable to the starter.



Photograph 12

Damaged aluminum cable clamp.



November 27, 2018
RCG File No. 47109069

Curriculum Vitae



VAN D. TULEY, IAAI-CFI FIRE CONSULTANT

Mr. Tuley is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators. Mr. Tuley is a Licensed Private Investigator in North Carolina, South Carolina, and Georgia. He served as a Special Agent with the United States Department of Justice Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) for over twenty four years, the last fifteen years as a Certified Fire Investigator (ATF-CFI). As an ATF-CFI he responded to approximately five-hundred fire scenes, to include residential and commercial structures. Mr. Tuley was also a member of ATF's National Response Team (NRT) for approximately sixteen years, responding to major fire and explosion losses throughout the United States. He has completed numerous educational seminars and classes in the field of fire investigation throughout his career. He has testified as an expert witness in both Federal and State court proceedings as well as depositions involving the investigation of fires.

Mr. Tuley has coordinated and instructed continuing education training seminars in fire investigation for State and Local fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Tuley has also instructed and given presentations in Fire Investigation and Fire Dynamics for the American Academy of Applied Forensics, the North Carolina Chapter of the International Association of Arson Investigators (NCIAAI), and local community colleges; Report Writing and Scene Documentation for the North Carolina Chapter of the International Association of Arson Investigators; Arson Investigation and the Science of Fire, Forensics for Criminal Litigators, at the National Advocacy Center in Columbia, South Carolina; Explosions and Explosives for the Fire Engineering Technology Program at the University of North Carolina at Charlotte; as well as numerous classes on Explosives Recognition, Responding to an Explosive Incident, and Processing Explosive Scenes to State, Local and Federal investigators. Mr. Tuley has also been an instructor for fire and explosive related classes at the Federal Law Enforcement Academy in Glynco, Georgia.

Mr. Tuley has over thirty years of combined investigative experience as a Police Officer and Detective for the Portage, Indiana Police Department and as a Special Agent with the Bureau of Alcohol, Tobacco, Firearms and Explosives.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

University of Evansville, Evansville, Indiana
Bachelor of Science in Law Enforcement - 1977

University of Evansville, Evansville, Indiana
Master of Science in Criminal Justice - 1979

Indiana Law Enforcement Training Academy, Plainfield, IN.
Basic Law Enforcement Academy - 1979



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1661 International Drive, Suite 400
Memphis, Tennessee 38120
(855) 782-4228 Telephone
(615) 883-4118 Facsimile

December 17, 2018

Re: RCG File No: 53701478
LLV Number: 4315521
VMF Location: 685 South B.B. King Boulevard Memphis, Tennessee
Subject: Preliminary/Final Report

Dear

A fire incident reportedly occurred at 15075 Highland Drive in McKenzie, Tennessee on November 1, 2018 involving US Postal Service vehicle LLV 4315521 with VIN 1GBCS1048R2921520. The vehicle was examined at the USPS Vehicle Maintenance Facility.

In the course of our work, we photographed, documented and inspected the fire damaged vehicle on November 20, 2018. Our work to complete this assignment was performed by Fire Consultant Lamar Childress, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The vehicle sustained severe fire damage to the engine compartment and moderate fire damage to the operator's compartment. Based upon fire patterns observed, it was determined that the fire originated within the engine compartment.
2. The area of origin was determined to have been on the left hand, mail side of the engine compartment, along the bulkhead.

3. Adverse electrical activity was observed on the stranded electrical conductors to the horn feed wire.
4. The electrical relay for the vehicle's horn appeared to be partially corroded on one side.
5. In the course of our investigation, weather data was reviewed on the date and time of the fire from <https://wunderground.com>. Rain was reported in the area on October 31, 2018 and on the morning of November 1, 2018.
6. The specific ignition sequence and cause of the fire was inconclusive due to the severity of damage in the area of origin, however the probability of moisture intrusion into the electrical horn relay caused an abnormal electrical event to occur inside the engine compartment could not be completely eliminated.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. Radial fire patterns were present on the left hand, mail side of the vehicle's hood and front fender. Based on the fire patterns observed, it was determined the fire originated within the engine compartment near the bulkhead.

Interior Inspection:

The mail/cargo area of the vehicle did not sustain fire or heat damage, moderate smoke staining was present.

The interior compartment sustained fire and heat damage to the left, mail side. Fire patterns indicated that the fire originated within the engine compartment and propagated to the interior near the heater and fan blower motor. Melting of the vehicle dashboard was also observed.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment sustained severe fire and heat damage. The vehicle battery was in place and sustained exterior fire damage only. The battery cables appeared to have been cut, most likely by fire department personnel.

A fire pattern was observed on the underside of the vehicle's hood. The pattern indicated that the fire originated on the left side of the engine compartment near the

vehicle bulkhead. The vehicle's electrical wiring harness was located in this area. Adverse electrical activity was noted on the remains of the horn feed wire.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

Examination of the fuse panel revealed no visible fire damage to the panel or any of the fuses. The plastic housing of the fuse panel was intact as were all of the fuses and connections.

The horn electrical relay was examined; the relay appeared to be partially corroded on one side, possibility due to moisture intrusion.

Area of Fire Origin:

Based upon fire patterns and the remaining physical evidence, it was determined that the fire originated at the rear of the engine compartment, along the bulkhead on the left, mail side. Various electrical conductors in bundled harnesses were observed near this area with all of the insulation burned off. While examining the electrical conductors, adverse electrical activity similar to arc beading was noted on the horn feed wire.

Potential Contributing Factors:

Moisture intrusion into the electrical horn relay from rain in the area the night before and morning of the fire event may have caused the relay to "short" creating an abnormal electrical event to the stranded conductors of the horn feed wire.

Evidence Collected:

Evidence collected included a portion of the stranded electrical conductors from the horn feed wire located in the area of origin. The electrical horn relay was also collected from underneath the driver's side dashboard.

Interviews

An interview with Postmaster provided the following information:

- The vehicle was last operated on October, 31, 2018, at approximately 3:30 P.M.

- Heavy rain was in the area the morning of November, 1, 2018.
- A mail clerk was “breaking down the mail” and smelled smoke. The clerk attempted to extinguish the fire with a fire extinguisher and called 911.

Service Records:

A review of the service records was completed. No recent work completed on the vehicle appeared to have contributed to the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Lamar R. Childress

Lamar R. Childress, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

December 17, 2018
RCG File No. 53701478

Photograph 1

Underside of vehicle hood, note fire pattern.



Photograph 2

Engine compartment, area of fire origin.

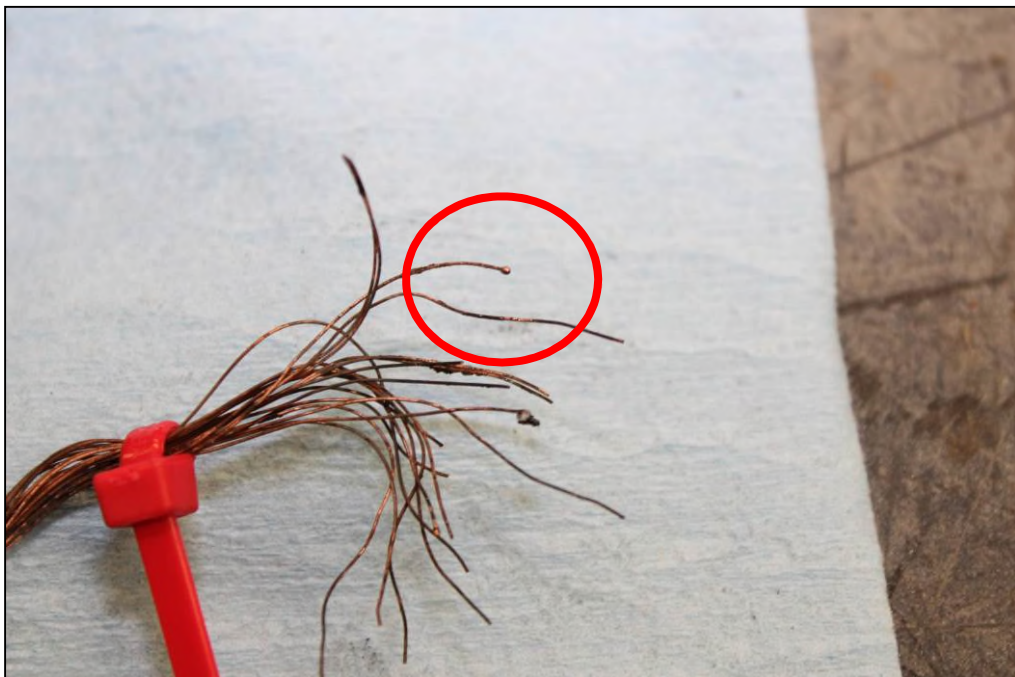


December 17, 2018
RCG File No. 53701478

Photograph 3
Horn feed wire.



Photograph 4
Horn feed wire, note the arc beading.



December 17, 2018
RCG File No. 53701478

Photograph 5
Horn electrical relay.



December 17, 2018
RCG File No. 53701478

Curriculum Vitae



LAMAR R. CHILDRESS, C.F.I (V), C.F.E.I., C.V.F.I. FIRE CONSULTANT

Mr. Childress is a twenty year veteran of the fire service. The last thirteen has been spent conducting origin and cause investigation and analysis of fire and explosion incidents. During this time he has served as Fire Marshal for the City of Jackson, Tennessee. His duties included: supervision and management of on-scene fire investigations, criminal follow-up investigations of incendiary fires, and development of the fire prevention program for the department.

Mr. Childress is a Certified Fire Investigator (CFI), Fire Investigation Technician (FIT), and holds the Motor Fire Vehicle Endorsement through the International Association of Arson Investigators. He is also a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) through the National Association of Fire Investigators. He has also completed the Fire/Arson Investigation course at the National Fire Academy located in Emmitsburg, MD.

Mr. Childress is also Fire Inspector I-II certified through the International Code Council and is licensed as a Fire Codes Inspector in the State of Tennessee.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator (CFI) – International Association of Arson Investigators, Inc.
Motor Vehicle Fire Endorsement-International Association of Arson Investigators
Fire Investigation Technician-International Association of Arson Investigators
Certified Fire and Explosion Investigator (CFEI) – National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) – National Association of Fire Investigators
Fire Inspector I-International Code Council
Fire Inspector II-International Code Council
Hazardous Materials Technician-State of Tennessee
Life Safety Compliance Officer I-Tennessee Commission on Firefighting
Life Safety Compliance Officer II-Tennessee Commission on Firefighting
Licensed Fire Codes Inspector in the State of Tennessee (#1285)
Licensed Private Investigator in the State of Tennessee (#7718)

Member of the International Association of Arson Investigators (IAAI)
Member of the Tennessee Advisory Committee on Arson (TACA)
Member of the National Association of Fire Investigators (NAFI)

EMPLOYMENT HISTORY

2018 – Present	Rimkus Consulting Group, Inc.
1999 – Present	Jackson, TN Fire Department
2001 – 2004	Town of Bethel Springs, TN Police Department-Part time
2009 – 2017	Madison County, TN Sheriff's Office-Part time



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
6990 Columbia Gateway Drive, Suite 110
Columbia, MD 21046
(877) 872-2999 Telephone
(410) 872-9111 Facsimile

February 10, 2016

Re: RCG File No: 47507988
LLV Number: 4315795
VMF Location: 6801 Oak Hall Lane in Columbia, Maryland
Subject: Final Report

Rimkus Consulting Group, Inc. was requested to examine the vehicle fire loss involving USPS LLV 4315795, VIN 1GBCS1040R2922113 that occurred while reportedly making a U-turn at 116 East Dover Street in Easton, Maryland. In the course of our work, we examined and documented the fire-damaged vehicle on December 10, 2015, and interviewed the carrier/operator on December 15, 2015.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility. The work to complete this assignment was performed by Fire Consultant Charles W. Feeley, IAAI-CFI. This report and case was reviewed by Mr. Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the left side of the engine compartment, at or around the exhaust manifold.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of power steering fluid being expelled onto the hot exhaust manifold

of the operating vehicle due to a failure of the high pressure hose or crimp. Physical evidence of power steering fluid was observed in and around the area of fire origin.

Observations

Exterior Inspection:

The front of the vehicle sustained fire and heat damage to the A and B posts, windshield, and roof. The left side sustained fire and heat damage from the front wheel well to the rear wheel well. The damage decreased at the cargo area and the damage was more severe at the upper portion. The rear sustained fire and heat damage to the upper portion of the overhead door. The right side sustained fire and heat damage from the front wheel well to the rear wheel well. The damage decreased at the cargo area and the damage was more severe at the upper portion. The sliding door sustained the most severe damage to the front edge. All four tires were Goodyear Wrangler tires. The rear tires were undamaged by the fire. The left front tire sustained heat damage to the top surface. The right tire sustained fire and heat damage to the top surface.

Interior Inspection:

The passenger compartment sustained fire and heat damage throughout. The combustible materials of the seat had been consumed. The dashboard had been consumed by the fire. The insulation of the wiring harness in the dashboard had been consumed. The rear cargo area sustained fire and heat damage throughout. The damage was most severe near to the roof. The damage extended to the floor at the front of the cargo area. The contents of the cargo area had been removed prior to the inspection. The fuse panel located under the dash area had been too severely damaged to inspect.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the engine compartment. The engine compartment sustained fire, heat and smoke damage throughout. The damage was most severe on the left driver's side of the engine compartment. The battery was inspected and had sustained fire damage to the top. Both battery terminals had become detached. The insulation had been consumed, but the cables displayed no physical evidence of adverse electrical activity. The alternator sustained heat damage, but the electrical connections were secure. The starter was undamaged by the fire and the electrical connections were secure. The brake booster sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been consumed. The fuel lines were intact and attached to the fuel rail on the right side of the engine. The aluminum dome covers had sustained fire and heat damage. The

damage increased on the left, driver's side of the engine. The wiring harness in the right rear of the engine compartment contained insulation on the conductors. The insulation of the conductors in the wiring harness on the left side of the engine compartment had been consumed. The upper radiator hose on the right side of the engine compartment sustained the most severe damage on the top. The hose positioned on the top of the engine sustained fire damage to all sides and had separated above the power steering pump. The lower radiator hose positioned on the left side of the radiator sustained fire damage on the top. The top left corner of the power steering pump had been consumed. The fixed pipe from the power steering pump extended up and to the left of the pump. The rubber hose originally connected to the fixed pipe of the power steering pump had been consumed. The manifold was positioned to the right rear of the power steering pump. The top surface of the manifold displayed staining consistent with burning liquid. The engine oil dipstick was evaluated and the fluid level could not be evaluated due to debris in the tube. The transmission fluid dipstick was evaluated and the fluid level could not be evaluated due to debris in the tube.

Undercarriage Inspection:

Examination of the undercarriage revealed no evidence of soot, smoke, heat or fire damage. The involved LLV was mounted on a GM frame. The fuel lines were positioned above the open frame to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. They were routed under the rear of the engine to the right side of the engine. The transmission was undamaged by the fire. The breather tube on top of the transmission was undamaged.

Fuse Panel Inspection:

The fuse panel in the engine compartment was too severely damaged to evaluate.

Area of Fire Origin:

The area of fire origin was determined to be on the left, driver's side of the engine compartment. The point of origin was determined to be at the exhaust manifold behind and beneath the power steering pump. There was physical evidence of power steering fluid sprayed onto the exhaust manifold of the operating vehicle.

Contributing Factors:

Age and deterioration of the power steering pump high pressure hose and/or possible failure of the crimp.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interviews:

The vehicle driver was interviewed by telephone on December 15, 2015 and provided the following information:

- She started work at approximately 10:00 a.m. on the day of the fire.
- The fire occurred at approximately 4:45 p.m.
- She drove the vehicle all day with no problems.
- She noticed an odor similar to gas but was not sure if it was from her vehicle.
- She had pulled off after her last stop when she realized that she had left her scanner.
- She began to make a U-turn to return for her scanner.
- She heard a loud bang or pop.
- She turned around to look into the rear cargo area thinking that something had fallen over.
- When she turned back around, she saw smoke from the front of the vehicle.
- She pulled over immediately and parked.
- Flames began to come from the front grill and dripping flames from beneath the engine.
- The flames then began to appear in the area of the windshield.

Service Records:

A review of the provided service records indicated that the LLV was last serviced on November 16, 2015. During this service, a PMI/B-Service was completed. No details within the provided records indicated service involving the power steering fluid pump or connecting hoses.

This preliminary report contains a summary of our findings and does not include a full description of the investigative tasks and methodology we took to reach our conclusions. If a full final report of findings is needed, one will be completed at the request of USPS.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles W. Feeley

Charles W. Feeley, IAAI- CFI
Fire Consultant

Jack R. Kennedy, III

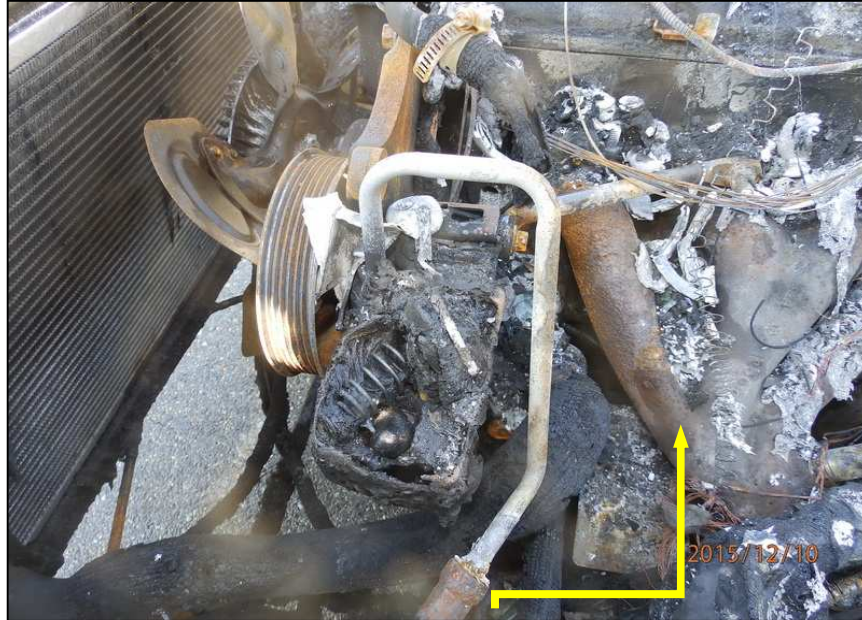
Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

February 10, 2016
RCG File No. 47507988

Photograph 1

A view of the left side of the engine compartment, manifold and high pressure line.



Photograph 2

A view of the power steering high pressure fixed line at the transition point to flexible hose.



February 10, 2016
RCG File No. 47507988

Photograph 3

A view of exhaust manifold.



Photograph 4

A view of the fuel lines routed above the open frame rail.



February 10, 2016
RCG File No. 47507988

CVs



**CHARLES FEELEY, I.A.A.I., C.F.E.I., C.F.I., P. I.
FIRE CONSULTANT**

Mr. Feeley had been employed by the Baltimore City Fire Department for 35 years. In this capacity he had been involved in many different emergency positions including Fire Fighter, Lieutenant, Captain, Chief Safety Officer, Battalion Commander and Division Chief.

Mr. Feeley has completed numerous educational seminars and continuing educational courses.

Mr. Feeley investigated over 550 fires in four years as an investigator and in excess of 5,000 fires as an incident commander at fire scenes. He has given expert testimony in civil and criminal court cases. He supervised the Office of the Fire Marshal in Baltimore City. He also supervised special projects such as the Arson Task Force, juvenile fire setters program, an educational intervention program and public education programs.

At Rimkus Consulting Group, Mr. Feeley has conducted over 500 fire origin and cause determinations that include, but are not limited to, assignments involving residential, commercial, industrial, passenger and commercial vehicles, marine, farm implement/equipment, appliance and electrical equipment related fires.

Mr. Feeley has been recognized for his achievements by being the recipient of awards that include Distinguished Unit Citation, Meritorious Conduct Award, Exemplary Performance, and Distinguished Service Award.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

National Fire Academy
National Nuclear Security Administration
United States Department of Justice, New Mexico Tech.
Department of Homeland Security
National Association of Fire Arson Investigators
United States Department of Justice, Anniston AL.
National Association of Fire Investigators.
Certified Fire and Explosion Investigator, N.A.F.I Certification
Certified Fire Investigator, International Association of Arson Investigators
Licensed as a Private Investigator in the State of Delaware

EMPLOYMENT HISTORY

2006 – Present	Rimkus Consulting Group, Inc.
1970 – 2006	Baltimore City Fire Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
3620 Horizon Drive, Suite 200
King of Prussia, PA 19406
(888) 623-1460 Telephone
(610) 941-1288 Facsimile

July 6, 2016

Re: RCG File No: 47701922
LLV Number: 4315948
VMF Location: 1425 Crooked Hill Road Harrisburg, Pennsylvania
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 4315948, VIN 1GBCS1044R2922261. The vehicle was examined at the USPS Harrisburg VMF located at 1425 Crooked Hill Road in Harrisburg, PA 17106. The fire incident reportedly occurred at 25 East Lisburn Road in Mechanicsburg, PA 17055 on April 7, 2016.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on April 12, 2016. Our work to complete this assignment was performed by Fire Consultant Jonathan Sivils, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. An examination of the involved LLV indicated that the fire originated in the operator compartment which sustained minor fire damage.
2. The specific area of fire origin was determined to be within the fuse panel positioned under the dashboard in the operator compartment.

3. The specific ignition sequence and cause of the fire was determined to be a direct result of water intrusion through the windshield of the involved LLV which came in contact with the fuse box and caused an adverse electrical event to occur.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. All exterior sides of the vehicle revealed no fire damage.

Interior Inspection:

Examination of the interior of the vehicle revealed the only fire damage had occurred to the fuse panel located along the front wall behind the drivers' wheel. Examination of the fuse panel components revealed that fuse #14 revealed signs of overheating and was melted. Examination of the electrical wiring that transverse behind the dashboard revealed no signs of obvious failure.

Engine Compartment Inspection:

The engine compartment was examined. No fire damage was noted. The fuel system was examined and found to be intact with no damage noted. The fuel filter was intact and located along rear of the engine near the fire wall. The fuel system was a GM model. The battery for the vehicle was located at the front right side of the engine compartment and had no fire damage. Based on the fire patterns, the engine compartment was eliminated as the area of origin.

Undercarriage Inspection:

Examination of the undercarriage revealed no damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed fuse #14 showed signs of overheating and was melted. None of the fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the fuse panel. The point of origin is fuse #14 for the hazard flashers.

Contributing Factors:

Issues with the LLV leaking rain water around the front windshield allowing water to drip onto the fuse panel during the days prior to the fire. The area sustained heavy rains. Excess amounts of water may have come in contact with the fuse panel causing its failure.

Evidence Collected:

There was no evidence collected from the scene.

Interviews:

On April 12, 2016, interview statements were reviewed from the driver of the vehicle at the time of the fire. She reported the following information:

- She was driving the vehicle along her route when she smelled smoke.
- She got out of the vehicle and noticed smoke and fire at the fuse panel.
- She yelled and a customer came out and extinguished the fire with a fire extinguisher.

Service Records:

A review of the service records for the involved LLV did not indicate any work or repairs that would have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jonathan K. Sivils

Jonathan K. Sivils, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

July 6, 2016
RCG File No. 47701922

Photograph 1
Front of vehicle.



Photograph 2
Drivers side of vehicle.



July 6, 2016
RCG File No. 47701922

Photograph 3
Rear of vehicle.



Photograph 4
Passenger side of engine compartment.



July 6, 2016
RCG File No. 47701922

Photograph 5
Drivers side of engine compartment.



Photograph 6
Undercarriage of vehicle from passenger side.



July 6, 2016
RCG File No. 47701922

Photograph 7
Interior of vehicle.

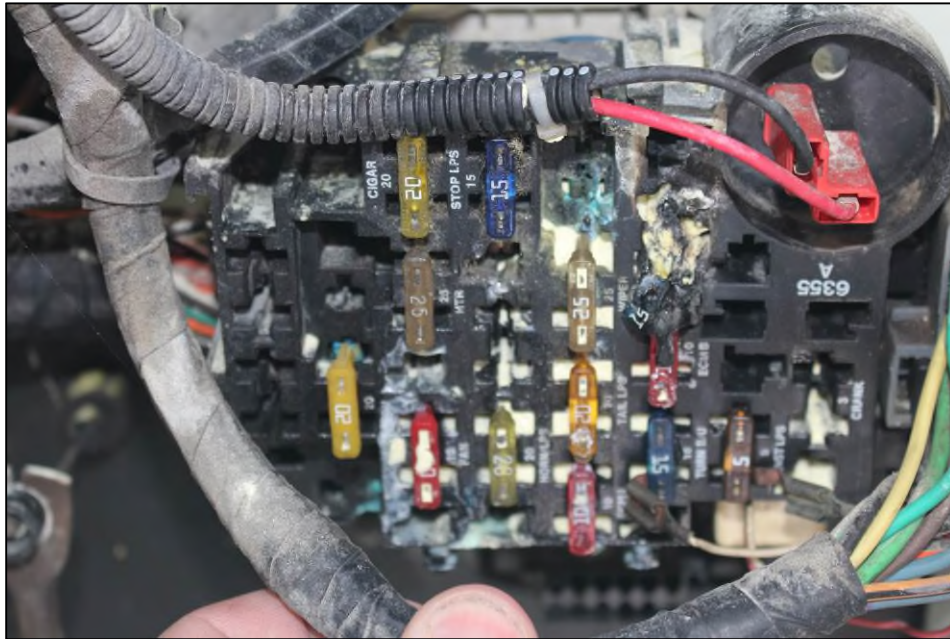


Photograph 8
Fuse panel area in corner.

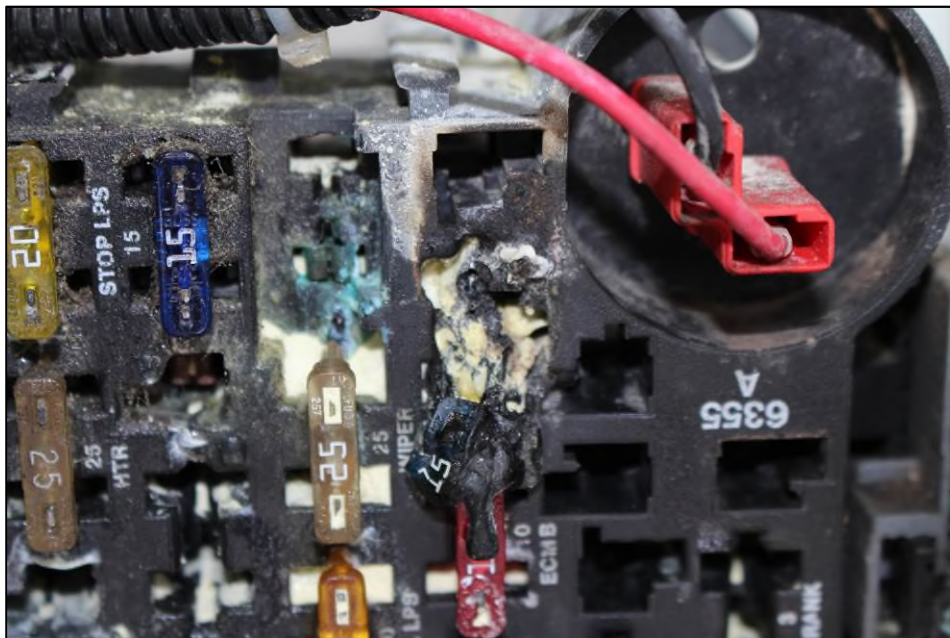


July 6, 2016
RCG File No. 47701922

Photograph 9
Fuse panel damaged.

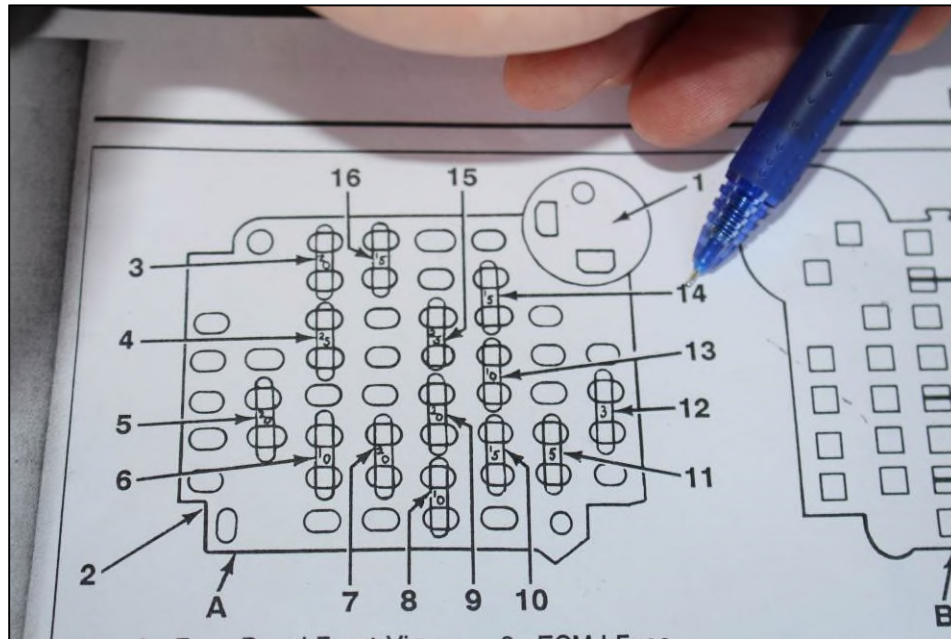


Photograph 10
Closer view of fuse panel, #14 point of origin.



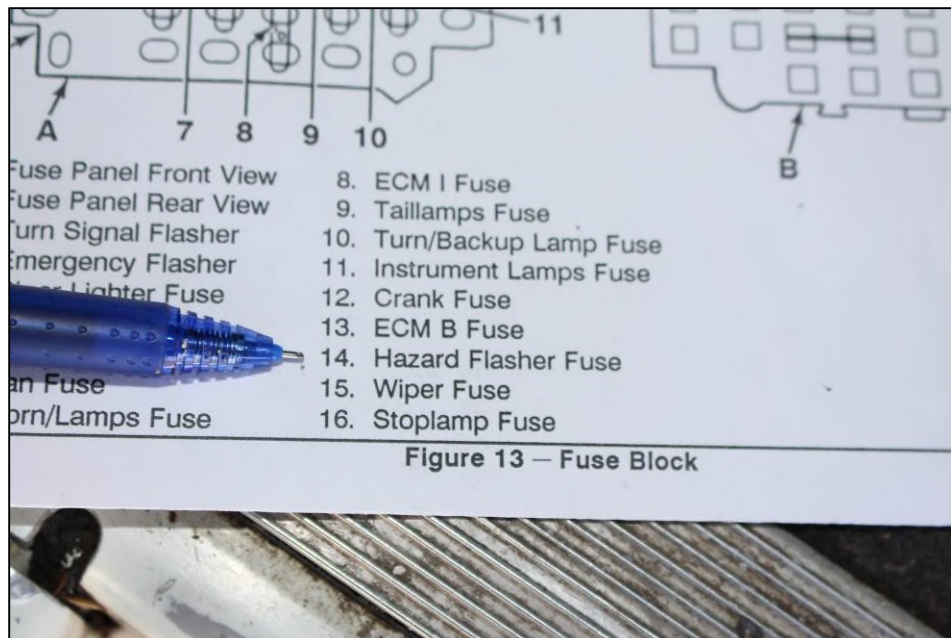
Photograph 11

Identification of fuse damaged #14.



Photograph 12

Identification of fuse damaged #14.



July 6, 2016
RCG File No. 47701922

CVs



Jonathan Sivils, IAAI-CFI, FIT, CFEI Fire Consultant

Mr. Sivils is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, as well as a Fire Investigation Technician (IAAI-FIT) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). He also holds an Associate of Science Degree in Fire Protection Technology. In a career spanning more than 25 years in the fire service, he has investigated and determined the origin and cause of more than 800 fires, to include commercial structures, residential structures, vehicles, marine and heavy equipment. He has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Sivils is a court-qualified expert witness in Criminal and Civil proceedings. Mr. Sivils has extensive training in fire and criminal investigations.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S Fire Protection Technology – Americus University, Washington D.C. – 2002
Bucks County Fire Chiefs and Firefighters Association
Bucks County Fire Marshal Association
International Association of Arson Investigators
National Association of Fire Investigators
National Fire Protection Association
Pennsylvania Association of Arson Investigators

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2012 – 2015	Donan Engineering Company, Inc.
2007 – 2012	Bucks county Fire Marshal Office, Bucks County, Pa
2005 – 2007	U.S. Department Of Defense Fire and Emergency Services
2009 – 2010	NEFCO Fire Investigations, Philadelphia, Pa
2003 – 2005	U.S. Department of Homeland Security
1998 – 2003	U.S. Department Of Defense Fire and Emergency Services
1993 – 2010	Penndel Fire Company, Penndel, Pa



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
6990 Columbia Gateway Drive, Suite 110
Columbia, MD 21046
(877) 872-2999 Telephone
(410) 872-9111 Facsimile

October 31, 2016

Re: RCG File No:

47508474
LLV Number: 4316383
VMF Location: 6801 Oak Hall Lane in Columbia, Maryland
Subject: Preliminary/Final Report

Dear,

Rimkus Consulting Group, Inc. was requested to examine the vehicle fire loss involving USPS LLV 4316383, VIN 1GBCS1046R2922729 that reportedly occurred after the vehicle stopped operating at 17590 Hardy Road in Mount Airy, Maryland on October 4, 2016. In the course of our work, we examined the involved LLV, documented the remaining physical evidence, and interviewed the operator/carrier on October 11, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 6801 Oak Hall Lane in Columbia, Maryland. The work to complete this assignment was performed by Fire Consultant Charles W. Feeley, IAAI-CFI. Obtained and reviewed VinLink Record, maintenance and repair orders and recalls and defects. This report and case was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of origin was determined to be on the right side of the engine compartment where the battery cables were routed to the alternator.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of adverse electrical activity involving the positive conductor from the battery to the alternator due to mechanical damage, or chaffing, to the insulation on the conductor. This exposed the conductor and caused an electrical arcing event which ignited surrounding combustible materials.

Observations

Exterior Inspection:

The exterior front of the vehicle sustained fire, heat and smoke damage. The front panel sustained heat and smoke damage above the grill and headlight assemblies. The hood, front support posts, and front windshield were no longer in place. The hood had been removed prior to our inspection. The front panel sustained smoke damage above the headlight assemblies. The exterior left side sustained fire and heat damage from the front bumper to the rear of the sliding door. The front fender had been consumed above the engine and the rear portion of the left wheel and tire. The door had sustained fire damage up to the roof line. The exterior rear sustained fire and heat damage to roll up door and bulkhead. The exterior right side sustained fire damage from the front bumper to the driver door. The front fender had been consumed above the right front wheel and tire. The roof had been consumed above the passenger compartment. It was intact above the cargo area.

Interior Inspection:

The operator compartment sustained fire and heat damage throughout. The combustible materials of the seat had been consumed. The dashboard had been consumed by the fire. The insulation of the wiring harness in the dashboard had been consumed. The front bulkhead had been consumed. The fuse block located on the right side of the passenger compartment had fallen into the engine compartment and was too severely damaged by the fire to be evaluated. The ignition was too severely damaged to be evaluated. The bulkhead between the passenger compartment and the cargo area had sustained heat and smoke damage. The rear cargo area sustained heat and smoke damage throughout. The contents of the cargo area had been removed prior to our inspection. A demarcation line was present and was lower at the entry through the front bulkhead.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the engine compartment. The

engine compartment sustained fire, heat and smoke damage throughout. The damage was most severe on the left side of the engine compartment. The power steering unit sustained fire damage. The flexible lines and reservoir had been consumed. The aluminum dome cover on the right side of the engine compartment above the fuel rail had melted. The upper radiator hose on the left side of the engine compartment had been consumed. A portion of the serpentine belt had survived the fire. The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been consumed. The melted remains of the fuse box from the passenger compartment and the attached wiring harness were inspected. The wiring harness sustained fire and heat damage. The insulation had been consumed. Beading on one conductor within the wiring harness was observed. The alternator sustained severe fire and heat damage. The insulation had been consumed from the conductors to the alternator. The main conductor was secure with no evidence of adverse electrical activity. The auxiliary conductor was secure. The section of the auxiliary conductor attached to the alternator was approximately six inches long and the end displayed heat and mechanical damage. The top of the battery case had been consumed. The conductors had become detached from the terminals. The negative conductor was attached to the frame and to the block. The main positive conductor was attached to the starter. The insulation had been consumed but displayed no evidence of adverse electrical activity. The auxiliary conductor to the alternator had been severed and contained beading at the remaining section attached to the battery clamp. A portion of the conductor approximately six inches long had been consumed.

Undercarriage Inspection:

Examination of the rear undercarriage revealed no evidence of soot, smoke, heat or fire damage. The undercarriage in the area of the engine sustained fire and heat damage. The involved LLV was mounted on a GM frame. The fuel lines were positioned within the open frame to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. They were routed above the transmission to the right side of the engine. The rubber sections of the fuel lines at the transmission were intact. The top of the transmission sustained heat damage from the engine compartment.

Fuse Panel Inspection:

The fuse panel of the passenger compartment which had fallen into the engine compartment was too severely damaged to evaluate.

Area of Fire Origin:

The area of fire origin was determined to be on the left side of the engine compartment. The area of origin was determined to be at the positive conductors from the battery to the alternator.

Contributing Factors:

Chaffing of the insulation of the positive conductor from the battery to the alternator, but mechanical damage or an existing splice could not be eliminated due to the severe fire damage and consumption of a section of the conductor.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interview:

The carrier and vehicle driver was interviewed on October 11, 2016, and provided the following information:

- She arrived at work at approximately 7:30 a.m.
- She operates the involved vehicle every day.
- She has experienced rough idling and sputtering on several occasions in the past.
- The vehicle has been sent to the shop for repairs.
- She began her route and the vehicle was operating normally.
- She stated the vehicle began to sputter and vibrate while making deliveries.
- Approximately 10 minutes prior to the fire, the condition increased.
- She had a large package to deliver and the next stop but was afraid to pull into the driveway, fearing that the vehicle may quit running.
- She began to smell smoke and then saw smoke coming from the dashboard.
- The vehicle then stalled and would not restart.
- A passerby helped her to push the vehicle into the driveway to get off of the public highway.
- The vehicle then caught fire.
- She called 911.
- She saw fire coming from beneath the engine compartment at the front in the center.

Service Records:

A review of the service records provided for the involved LLV did not reveal any recent repairs or work that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Charles W. Feeley

Charles W. Feeley, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

October 31, 2016
RCG File No. 47508474

Photograph 1

A view of the front of the vehicle.



Photograph 2

A view of the engine compartment.



Photograph 3

A view of the positive conductor from the battery clamp.



Photograph 4

A view of the conductor from the alternator.



Photograph 5

A view of the distance between the two segments of the conductors.



Photograph 6

A view of an exemplar.



October 31, 2016
RCG File No. 47508474

CVs



**CHARLES FEELEY, I.A.A.I., C.F.E.I., C.F.I., P. I.
FIRE CONSULTANT**

Mr. Feeley had been employed by the Baltimore City Fire Department for 35 years. In this capacity he had been involved in many different emergency positions including Fire Fighter, Lieutenant, Captain, Chief Safety Officer, Battalion Commander and Division Chief.

Mr. Feeley has completed numerous educational seminars and continuing educational courses.

Mr. Feeley investigated over 550 fires in four years as an investigator and in excess of 5,000 fires as an incident commander at fire scenes. He has given expert testimony in civil and criminal court cases. He supervised the Office of the Fire Marshal in Baltimore City. He also supervised special projects such as the Arson Task Force, juvenile fire setters program, an educational intervention program and public education programs.

At Rimkus Consulting Group, Mr. Feeley has conducted over 500 fire origin and cause determinations that include, but are not limited to, assignments involving residential, commercial, industrial, passenger and commercial vehicles, marine, farm implement/equipment, appliance and electrical equipment related fires.

Mr. Feeley has been recognized for his achievements by being the recipient of awards that include Distinguished Unit Citation, Meritorious Conduct Award, Exemplary Performance, and Distinguished Service Award.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

National Fire Academy
National Nuclear Security Administration
United States Department of Justice, New Mexico Tech.
Department of Homeland Security
National Association of Fire Arson Investigators
United States Department of Justice, Anniston AL.
National Association of Fire Investigators.
Certified Fire and Explosion Investigator, N.A.F.I Certification
Certified Fire Investigator, International Association of Arson Investigators
Licensed as a Private Investigator in the State of Delaware

EMPLOYMENT HISTORY

2006 – Present	Rimkus Consulting Group, Inc.
1970 – 2006	Baltimore City Fire Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
6565 Americas Parkway, NE, Suite. 200
Albuquerque, New Mexico 87110
(866) 834-8517 Telephone
(602) 216-2201 Facsimile

April 19, 2019

Re: RCG File No: 76300624
LLV Number: 4316428
VMF Location: 1135 Broadway NE, Albuquerque, New Mexico
Subject: Preliminary/Final Report

Dear Ms.

On March 18, 2019, a fire occurred involving a 1994 Grumman, LLV 4316428. At the time of the fire, the vehicle was located near 1036 W. Calle De Pitahaya Road in Roswell, New Mexico.

On March 22, 2019, Rimkus Consulting Group, Inc. was retained to examine LLV 4316428. Our inspection of the vehicle occurred on March 27, 2019, at the Vehicle Maintenance Facility located at 1135 Broadway NE, in Albuquerque, New Mexico. In the course of our work, we completed an on-site inspection of the vehicle, including photographing the vehicle and a review of the vehicle maintenance history. The work to complete this assignment was performed by Fire Consultant Thomas D. Kane, IAAI-CFI (V). This report was technically reviewed by Fire Division Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations", and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator."

Conclusions

1. The fire originated in the engine compartment in the area of the bulkhead on the left (mail) side of the vehicle.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a leak in the fuel injector throttle body and the atomized gasoline vapor coming in contact with a competent ignition source, in the immediate vicinity of the fuel lines or a hot surface ignition of the accumulation of engine fluids within the engine compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The front grille and lights of the LLV were melted or missing. The most severe fire damage was observed on the left side of the engine compartment, from the middle of the compartment towards the bulkhead. The aluminum roof of the vehicle that covered the operator's compartment was melted. The doors and frames were partially melted.

No structural damage was observed to the exterior cargo area of the vehicle. Based on the fire patterns observed, it was determined the fire initiated on the left side of the engine compartment near the starter and rubber section of a fuel line.

There were no obvious signs of pre-fire collision damage. Exterior fire damage was confined to the engine compartment and operator compartment.

Interior Inspection:

The interior cargo/mail area sustained severe smoke damage. Fire damaged mail items were present in the cargo area. Fire debris from the operator's compartment was observed on the floor of the cargo compartment.

The operator's compartment sustained severe fire and heat damage. Fire patterns indicated this was the result of the fire's extension from the engine compartment. The bulkhead was melted. The bundled wiring harnesses, the fuse panel, and the engine control module (ECM) were destroyed by the fire.

The mail tray and dashboard were melted. The driver's seat was consumed to its frame. Fire damaged mail was present on the mail side of the interior compartment.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5-liter (L), four-cylinder engine. The engine was equipped with a throttle body, fuel-injected system. The vehicle had a standard ignition coil. The engine compartment sustained severe fire damage. The driver's side contained the brakes master cylinder, battery, alternator, rubber and plastic components, and the majority of the electrical conductors within the compartment. All of the plastic and rubber engine components were consumed by the fire and the light metal components were melted. The remaining fire patterns indicated that the fire originated on the left side of the engine and spread to the right side. No evidence was observed of the fire originating within the brakes, wheel hubs, or tires in the area of the engine compartment.

The majority of damage to the engine compartment and exterior occurred on the mail side in the area of the starter and section of rubber fuel line. Fire patterns indicated this was the area of origin. Various conductors and switches connecting to the mail-side headlights, flashers, heater, and fan blower motor were located in this area and were observed with severe fire damage. The spark plugs, plug wires, and rubber boots were located a little further towards the front of the engine compartment and were consumed by the fire. The fuel lines came up along the rear of the engine and turned to the driver's side of the engine compartment. The steel fuel lines were observed to be intact and the rubber sections were consumed by the fire in this area. Fire patterns indicated the fire originated further to the mail side along the engine block near the starter motor where they extended into the engine compartment.

The battery for the vehicle was located at the front driver's side of the engine compartment. The battery, the battery terminals, and battery cables sustained severe fire damage and no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid, and brake fluid levels could not be determined due to the severe fire damage.

The mail side of the engine compartment sustained severe damage to the electrical system. All of the wiring insulation had burned away. All of the remaining engine components were intact and readily identifiable. Pre fire fuel or fluid leaks could not be eliminated as a contributing cause for this fire.

Undercarriage Inspection:

Due to the severe fire damage the vehicle could not be safely raised for an inspection of the undercarriage.

Fuse Panel Inspection:

The fuse panel was destroyed by the fire.

Area of Fire Origin:

The area of fire origin was located within the mail side of the engine compartment.

Potential Contributing Factors:

A fuel leak at the rubber section of the fuel line likely contributed to the cause of this fire. Mechanics at the Albuquerque VMF reported several rubber fuel line failures on other vehicles due to dry rot.

Evidence Collected:

No evidence was collected.

Service Records:

Based upon our review of the vehicle's maintenance records, no work to repair or replace the rubber section of the fuel lines was conducted within the past year. Regular preventative maintenance was performed and any fuel leaks would have been detected during those services. The starter was replaced twice which is uncommon.

Witness Statements:

The carrier provided a brief statement in which he reported that smoke and flames were observed coming from the engine compartment while making a turn. A turning movement requires increased hydraulic pressure within the power steering system. The hydraulic fluid within the system is flammable and will ignite if leaking fluid comes into contact with hot engine surfaces.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Thomas D. Kane

Thomas D. Kane, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

April 19, 2019
RCG File No. 76300624

Photograph 1
Front of vehicle.



Photograph 2
Rear of vehicle.



April 19, 2019
RCG File No. 76300624

Photograph 3
Cargo Area.



Photograph 4
Driver Seat and dashboard.



April 19, 2019
RCG File No. 76300624

Photograph 5
Mail tray side.



Photograph 6
Engine compartment.



Photograph 7

Mail side of engine compartment.



Photograph 8

Steel fuel line at rubber fuel line connection in area of fire origin.



April 19, 2019
RCG File No. 76300624

Curriculum Vitae



**THOMAS D. KANE, I.A.A.I.-C.F.I., P.I.
FIRE CONSULTANT**

Mr. Kane specializes in fire origin and cause investigation, and consultation. Mr. Kane has over twenty-five years of experience in law enforcement with half of his career as an Arson Detective. Mr. Kane has investigated and determined the cause and origin of over one thousand fires occurring in commercial structures, residential homes, recreational vehicles, automobiles, and wild lands. Mr. Kane has been recognized as an expert witness in both criminal and civil court, in the fields of fire cause and origin, building construction, criminal investigations, firearms, transient criminal groups, and issues relating to building safety and security.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

State University of New York, College at Buffalo, Bachelor of Science, Criminal Justice.
City of New York, Police Academy, New York City Police Officer certification.
Suffolk County, New York, Police Academy, New York State Police Officer certification.
Phoenix Regional Police Academy, Arizona Police Officer certification.
International Association of Arson Investigators, Certified Fire Investigator, #28-036.
International Association of Arson Investigators, member since 2002.
International Association of Arson Investigators, Arizona Chapter, member since 2000.
Maricopa County Fire Investigation Task Force, member since 2000
FBI Joint Terrorism Task Force on Arson, formed to apprehend the "Phoenix Mountain Preserve Arsonist," in 2000.
National Association of Bunco Investigators, member since 1999.
Licensed Contractor, Arizona Registrar of Contractors, since 2000.
Licensed Private Investigator, Arizona Department of Public Safety, since 2004.
Licensed Private Investigator, New Mexico PI Board, since 2014.

Mr. Kane has over seven hundred hours of classroom and practical instruction in fire dynamics, arson, and general investigations. Classes have included interviews and interrogations, covert surveillance technology, fire science, fire behavior, fire chemistry, hazardous materials, flammable liquids, fire origin and cause determination, electrical fire investigation, explosion scene investigation, and evidence collection and preservation. These are to mention only some of the areas in which formal training has been received.

EMPLOYMENT HISTORY

1988 - 1989	New York City Police Department (NYPD)
1989 - 1993	Suffolk County Police Department (SCPD)
2004 - 2006	Crawford Investigative Services, Fire Investigator
2006 - 2008	Jerry James and Associates, Fire Investigator
2008 - 2013	Fire Cause Analysis, Fire Investigator
1993 - Present	Scottsdale Police Department (SPD)
2004 - Present	Private, Certified Fire Investigator (IAAI)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

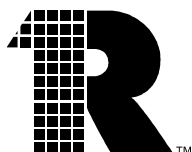
US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
92 South Street
Hopkinton, Massachusetts 01748
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

February 21, 2018

Re: RCG File No: 44803504
LLV Number: 4316445
VMF Location: 4E Central Street Worcester, Massachusetts
Subject: Preliminary/Final Report

On December 12, 2017, a fire occurred in a US Postal Service vehicle in Shrewsbury, Massachusetts. On December 20, 2017, Rimkus Consulting Group, Inc. was retained to examine the Grumman LLV 4316445. On January 2, 2017, we conducted a fire origin and cause examination on the vehicle at the Worcester VMF located at 4E Central Street in Worcester, Massachusetts.

In the course of our work, we interviewed the mail carrier, examined the vehicle and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Scott Popovich, IAAI-CFI (V). This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator's compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the rheostat headlamp switch positioned in the left side of the dashboard.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. We observed severe fire damage to the engine and passenger compartments of the LLV. Parts of the fenders, engine hood, bulkhead, windshield, support post and roof over the passenger compartment had been consumed by fire. Fire patterns indicate a fire originating in the area of the dash board and progressing towards the engine and cargo compartments. The rear cargo door was intact and was in the closed position during the fire. The break and running light housings in the rear of the vehicle were undamaged. All four tires were intact and inflated.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred in and around the dashboard area. The majority of materials in and around the dashboard area had been consumed during the fire. The fire damage progressed from the passenger compartment into the engine compartment and then into the cargo area of the LLV. The passenger compartment was systematically delayered and we did not observe any items of evidentiary value. A few pieces of mail were found while delayering and the staff was notified.

Engine Compartment Inspection:

The engine compartment was examined. Fire patterns indicated a fire progressing from the passenger compartment into the engine area. Most of the hoses in the front of the engine compartment had melting on the top and towards the bulkhead. Many of the soft metals remained undamaged. The battery cable remained along with the terminals to the battery. The starter was examined and we did not observe any damage to the starter and the terminals were intact and free of damage. The alternator was examined and found to be free of damage.

Undercarriage Inspection:

The undercarriage was examined. The involved LLV was mounted on a GM frame. The frame rail components were undamaged. The associated fuel lines and filter system were intact and free of damage. The undercarriage was eliminated as the origin of the fire.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage and was consumed.

Area of Fire Origin:

Based on our observations and witness statements, it was determined that the area of fire origin was in the area of the dashboard.

Contributing Factors:

The specific ignition sequence and cause for the fire was determined to be a result of a failure at the rheostat headlamp switch.

Evidence Collected:

No evidence was collected at the time of the inspection.

Interview:

An Interview was conducted with full-time, mail carrier reported the following information:

He was not assigned to a regular route. He was on a City route at the time of the fire. He has driven this LLV in the past and had not had any issues. He was in the Jacobson area where it was foggy and he went to put his headlights on. When he turned the knob it was hot. The headlight switch started to smoke on the dash. He pulled the knob out and it was "pinkish" (He provided a photograph of what he saw) under the knob, he felt vent heat, and grey then black smoke started coming out. When he crossed Boylston Street he took a right and pulled over to a safe place. There was no fire extinguisher in the vehicle and could not put the fire out. He started seeing

flames from the dashboard. He called 9-1-1 and then his supervisor. He is a smoker but not in the vehicle. There were no other ignition sources present.

Service Records:

Service records were collected and were saved as part of the file. Records indicated the headlamp switch was replaced on November 27, 2017, less than a week before the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Scott S. Popovich

Scott S. Popovich, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CV

February 21, 2018
RCG File No. 44803504

Photograph 1
Front of the LLV.



Photograph 2
Drivers side of the LLV.



February 21, 2018
RCG File No. 44803504

Photograph 3
Rear of the LLV.



Photograph 4
Mail side of the LLV.



February 21, 2018
RCG File No. 44803504

Photograph 5

Interior and view of the consumed dash area.



Photograph 6

Engine compartment.



February 21, 2018
RCG File No. 44803504

Photograph 7
Undercarriage of the LLV.



Photograph 8

Photograph of headlight switch just prior to fire provided by driver.



February 21, 2018
RCG File No. 44803504

CVs



SCOTT S. POPOVICH, CFPS, CFEI, CVFI, FIT FIRE CONSULTANT

Mr. Popovich's professional career includes 25 years with the Woonsocket Fire Department in the city of Woonsocket, RI. In that capacity he has been involved in many different emergency services including Deputy Director of Emergency Management, Assistant Fire Marshal, Lieutenant and Firefighter. As a licensed state of Rhode Island Assistant Deputy State Fire Marshal his duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Popovich has a Master of Science in Fire and Arson Investigation from the University of New Haven with a heavy concentration in forensics and a Bachelor of Science in Public Administration from Roger Williams University. He maintains certifications as a fire investigator and fire inspector and has attended numerous classes at the National Fire Academy and the Rhode Island State Crime Laboratory.

Mr. Popovich was recently recognized for project development for the planning and execution of Emergency Response Training for CVS Corporate Headquarters in Woonsocket, Rhode Island.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

M.S. – Fire and Arson Investigation – University of New Haven, Connecticut
B.S. – Public Administration – Roger Williams University, Rhode Island
A.S. – Fire Science – Community College of Rhode Island

Licenses and Certifications

Fire Investigative Technician (FIT) by the International Association of Arson Investigators
Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) by the National Association of Fire Investigators
Certified Fire Protection Specialist (CFPS) by the National Fire Protection Association
Certified Fire Inspector (CFI) by the National Fire Protection Association
Certified Evidence Collection Technician (ECT) by the International Association of Arson Investigators
Licensed Emergency Medical Technician by the State of Rhode Island
Licensed Oil Heat Technician
Licensed Hoisting Equipment Operator by the State of Rhode Island
Licensed Private Detective in the State of Rhode Island

Professional Memberships

IAAI (International Association of Arson Investigators)
RIIAAI (Rhode Island Chapter of International Association of Arson Investigators) Board Member



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus North Carolina, PLLC
5900 Harris Technology Boulevard Suite P
Charlotte, North Carolina 28269
(704) 896-6227 Telephone
(704) 896-6228 Facsimile
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2019

September 21, 2018

Re: RCG File No: 47108971
LLV Number: 4316523
VMF Location: 201 North Murrow Boulevard Greensboro, North Carolina
Subject: Preliminary/Final Report

Dear

On August 8, 2018, a fire involving USPS LLV 4316523 reportedly occurred while the LLV was in use, delivering mail in the 1100 block of Peenywood Lane in High Point, North Carolina. The vehicle was manufactured by General Motors in 1994 and was a Grumman model LLV-94 RH.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Greensboro, North Carolina VMF located at 201 North Murrow Boulevard in Greensboro, North Carolina. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on September 11, 2018. The vehicle examination was conducted by Fire Consultant Van D. Tuley, IAAI-CFI (V). A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations" and NFPA 1033 Standard for "Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment of the vehicle.

2. The specific area of origin could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the vehicle and the lack of remaining physical evidence for examination.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The front grill and lights of the LLV had been destroyed by the fire and were no longer present. The hood assembly had melted and was no longer present, exposing the entire engine compartment. The aluminum roof over the driver's compartment had melted and partially collapsed into the vehicle. Only a portion of the door frame on the driver's side of the vehicle remained, and the frame for the mail side door was also severely fire damaged, however the door was still intact.

Fire damage was observed to the exterior cargo area of the vehicle, however the cargo area was still intact. Based on the fire patterns observed, it was determined the fire originated in the engine compartment and progressed into the operator's compartment and cargo area of the vehicle.

Interior Inspection:

The interior cargo/mail area sustained minor to moderate fire, smoke, and soot damage. Fire patterns indicated the fire melted the aluminum panel between the operator and cargo compartments. Moderate smoke and soot damage was observed along the ceiling and upper side walls of the cargo space.

The operator's compartment sustained severe fire and heat damage. All of the combustible materials located within this area were consumed by the fire, including the fuse panel and various electrical conductors in the dashboard area on the driver's side. The bulkhead between the engine compartment and operator's compartment had also been destroyed by the fire. The bundled wiring harnesses on the driver's side that had been connected to the fuse panel and ran towards the Engine Control Module (ECM) sustained severe fire damage. The ECM had been destroyed by the fire. The steering wheel, steering column, and master cylinder for the brake system were observed on the floorboard of the operator's compartment.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was equipped with a fuel injected system. The vehicle had a standard ignition coil. The engine compartment had sustained severe fire damage. All combustible materials in the engine compartment, consisting of hoses and belts, had been consumed by the fire. Severe melting had occurred to various components within the engine compartment. No remains of the vehicle's battery were found within the engine compartment. The fuel injection system was severely fire damaged, and it could not be determined if a leak may have occurred in the fuel injection system. The master cylinder for the brake system had also been severely fire damaged. The most severe fire damage had occurred on the driver's side of the engine compartment.

Undercarriage Inspection:

Severe fire damage was observed to the undercarriage in the area of the engine compartment. The damage to the undercarriage was the result of the fire engine compartment and various items from the engine compartment melting and/or burning and dropping down under the vehicle. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The rear tires on the vehicle were intact and free of fire damage. The front tires had sustained severe fire damage. The LLV was mounted on a GM general frame and was undamaged.

Fuse Panel Inspection:

The fuse panel had been destroyed and there were no remains of the fuse panel to examine.

Area of Fire Origin:

The fire originated in the engine compartment of the vehicle. The specific area of origin could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining evidence for examination.

Potential Contributing Factors:

A fuel leak from the fuel lines may have allowed gasoline to come into contact with the hot exhaust manifold and pipe causing a hot surface ignition.

After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire

originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Service Records:

A review of the USPS service records revealed that the last service had been conducted on LLV 4316523 on August 10, 2018. The vehicle had unscheduled service performed on July 20, 2018, when the #4 injector was leaking. The fuel injector and the intake manifold gasket were replaced at that time. On May 30, 2018, during routine maintenance on the vehicle, a fuel injector was replaced as well as the intake manifold gasket. The ignition module was replaced on the vehicle on November 27, 2017.

Witness Statement:

The mail carrier stated that while he was driving the LLV, he noticed smoke coming from under the dashboard. He stated that he then pulled over to the side of the road, got out of the vehicle and noticed smoke coming from the front of the vehicle. He then called 911 and started removing the mail from inside the vehicle. He stated that the vehicle became engulfed in flames in a short period of time.

Evidence Collected:

No evidence was collected from the vehicle.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NORTH CAROLINA, PLLC

Van D. Tuley

Van D. Tuley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curricula Vitae

September 21, 2018
RCG File No. 47108971

Photograph 1

Front view of the vehicle.



Photograph 2

Mail side of the vehicle.



September 21, 2018
RCG File No. 47108971

Photograph 3
Rear of the vehicle.



Photograph 4
Engine compartment of the vehicle.



Photograph 5
Front of the engine.



Photograph 6
Remains of the master brake cylinder, steering wheel, and steering column.



September 21, 2018
RCG File No. 47108971

Photograph 7

Fire damage in the cargo compartment.



September 21, 2018
RCG File No. 47108971

Curriculum Vitae



VAN D. TULEY, IAAI-CFI FIRE CONSULTANT

Mr. Tuley is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators. Mr. Tuley is a Licensed Private Investigator in North Carolina, South Carolina, and Georgia. He served as a Special Agent with the United States Department of Justice Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) for over twenty four years, the last fifteen years as a Certified Fire Investigator (ATF-CFI). As an ATF-CFI he responded to approximately five-hundred fire scenes, to include residential and commercial structures. Mr. Tuley was also a member of ATF's National Response Team (NRT) for approximately sixteen years, responding to major fire and explosion losses throughout the United States. He has completed numerous educational seminars and classes in the field of fire investigation throughout his career. He has testified as an expert witness in both Federal and State court proceedings as well as depositions involving the investigation of fires.

Mr. Tuley has coordinated and instructed continuing education training seminars in fire investigation for State and Local fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Tuley has also instructed and given presentations in Fire Investigation and Fire Dynamics for the American Academy of Applied Forensics, the North Carolina Chapter of the International Association of Arson Investigators (NCIAAI), and local community colleges; Report Writing and Scene Documentation for the North Carolina Chapter of the International Association of Arson Investigators; Arson Investigation and the Science of Fire, Forensics for Criminal Litigators, at the National Advocacy Center in Columbia, South Carolina; Explosions and Explosives for the Fire Engineering Technology Program at the University of North Carolina at Charlotte; as well as numerous classes on Explosives Recognition, Responding to an Explosive Incident, and Processing Explosive Scenes to State, Local and Federal investigators. Mr. Tuley has also been an instructor for fire and explosive related classes at the Federal Law Enforcement Academy in Glynco, Georgia.

Mr. Tuley has over thirty years of combined investigative experience as a Police Officer and Detective for the Portage, Indiana Police Department and as a Special Agent with the Bureau of Alcohol, Tobacco, Firearms and Explosives.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

University of Evansville, Evansville, Indiana
Bachelor of Science in Law Enforcement - 1977

University of Evansville, Evansville, Indiana
Master of Science in Criminal Justice - 1979

Indiana Law Enforcement Training Academy, Plainfield, IN.
Basic Law Enforcement Academy - 1979



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
92 South Street
Hopkinton, Massachusetts 01748
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

December 7, 2018

Re: RCG File No: 44804015
LLV Number: 4316806
VMF Location: 85 Weston Street Hartford, Connecticut
Subject: Preliminary/final Report

Dear

On October 3, 2018, a fire occurred in a US Postal Service vehicle in Hebron, Connecticut. Rimkus Consulting Group, Inc. was retained to examine the Grumman LLV# 4316806. On October 19, 2018 we conducted an examination on the LLV at the Hartford VMF located at 85 Weston Street in Hartford, Connecticut.

In the course of our work, we examined the LLV and documented the damage with photographs. Our work to complete this assignment was performed by Fire Consultant Scott Popovich, IAAI-CFI (V). This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the coil packs on the driver's side and the nearby wiring harness and some direction melting on the plastics of the alternator.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the coil packs on the driver's side and the nearby wiring harness and some direction melting on the plastics of the alternator.

Observations

Exterior Inspection:

The examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left refers to the mail side. We did not observe any damage to the exterior of the LLV.

Interior Inspection:

The interior was inspected. The inspection began at the driver's door. We did not observe any fire damage to the interior of the LLV.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. A small patch of smoke and soot damage was observed on the underside of the hood over the engine. The battery, starter and alternator were examined and we did not observe any abnormal electrical activity on those components that would have caused or contributed to the fire. The only fire damage observed was to the coil on the driver's side and the nearby wiring harness and some direction melting on the plastics of the alternator.

Undercarriage Inspection:

The undercarriage was examined. The involved LLV was mounted on a GM frame. The frame rail components were undamaged. The associated fuel lines and filter system were intact and free of damage. The undercarriage was eliminated as the origin of the fire.

Fuse Panel Inspection:

The fuse panel was inspected. We did not observe any fuses that had tripped or blown.

Area of Fire Origin:

Based on the observed patterns of fire damage, witness statements, and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated in the engine compartment of the vehicle. The specific area origin was at or near the coil pack on the driver's side of the engine.

Potential Contributing Factors:

During our examination we determined that the most probable cause of the fire was an overheated coil pack. Reportedly, the coil ignition sets were replaced on October 1, 2018, two days prior to the fire.

Service Records:

A review of the service records was completed. The last preventive maintenance was completed on February 21, 2018. Reportedly, the coil ignition sets were replaced on October 1, 2018, two days prior to the fire. Maintenance performed on the vehicle prior to the fire may have been a contributing factor.

Witness:

Multiple attempts were made to contact the carrier. No return calls were received. The notice indicated that the carrier had lost power to the vehicle, the vehicle stalled and smoke was observed coming from the engine compartment. A small fire was observed within the engine compartment.

Evidence Collected:

Items collected and shipped to the Rimkus Consulting office in Charlotte, NC include the wiring harness, 2 coils packs, alternator and miscellaneous associated parts from LLV 4316806.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to

determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Scott S. Popovich

Scott S. Popovich, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

December 7, 2018
RCG File No. 44804015

Photograph 1

Front and drivers side of LLV.



Photograph 2

Rear of LLV.

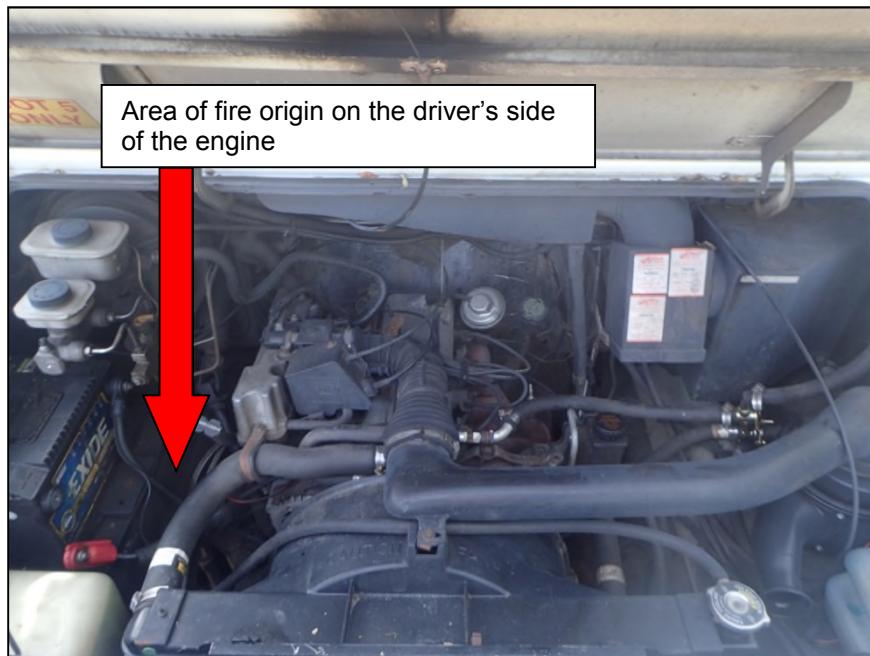


December 7, 2018
RCG File No. 44804015

Photograph 3
Mail side of LLV.



Photograph 4
Engine Compartment of LLV.



Photograph 5

Close up of fire damage at coil pack in engine compartment.



Photograph 6

Fire damaged coil after removal.



December 7, 2018
RCG File No. 44804015

Curriculum Vitae



SCOTT S. POPOVICH, CFPS, CFEI, CVFI, FIT FIRE CONSULTANT

Mr. Popovich's professional career includes 25 years with the Woonsocket Fire Department in the city of Woonsocket, RI. In that capacity he has been involved in many different emergency services including Deputy Director of Emergency Management, Assistant Fire Marshal, Lieutenant and Firefighter. As a licensed state of Rhode Island Assistant Deputy State Fire Marshal his duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Popovich has a Master of Science in Fire and Arson Investigation from the University of New Haven with a heavy concentration in forensics and a Bachelor of Science in Public Administration from Roger Williams University. He maintains certifications as a fire investigator and fire inspector and has attended numerous classes at the National Fire Academy and the Rhode Island State Crime Laboratory.

Mr. Popovich was recently recognized for project development for the planning and execution of Emergency Response Training for CVS Corporate Headquarters in Woonsocket, Rhode Island.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

M.S. – Fire and Arson Investigation – University of New Haven, Connecticut
B.S. – Public Administration – Roger Williams University, Rhode Island
A.S. – Fire Science – Community College of Rhode Island

Licenses and Certifications

Fire Investigative Technician (FIT) by the International Association of Arson Investigators
Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) by the National Association of Fire Investigators
Certified Fire Protection Specialist (CFPS) by the National Fire Protection Association
Certified Fire Inspector (CFI) by the National Fire Protection Association
Certified Evidence Collection Technician (ECT) by the International Association of Arson Investigators
Licensed Emergency Medical Technician by the State of Rhode Island
Licensed Oil Heat Technician
Licensed Hoisting Equipment Operator by the State of Rhode Island
Licensed Private Detective in the State of Rhode Island

Professional Memberships

IAAI (International Association of Arson Investigators)
RIIAAI (Rhode Island Chapter of International Association of Arson Investigators) Board Member



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
5900 Harris Technology Boulevard, Suite P
Charlotte, North Carolina 28269
Telephone: (704) 896-6227
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2020

July 30, 2019

Re: RCG File No: 100007622
LLV Number: 4317833
VMF Location: 2901 Scott Futrell Drive Charlotte, North Carolina
Subject: Preliminary/Final Report

Dear

On June 28, 2019, a fire involving USPS LLV 4317833 reportedly occurred while the vehicle was being operated on I-485, near exit 64B in Charlotte, North Carolina. The vehicle was manufactured by GMC in 1994 and was a Grumman model with VIN 1GBCS1041R2924209.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Charlotte VMF located at 2901 Scott Futrell Drive in Charlotte, North Carolina. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on July 10, 2019. The vehicle examination was conducted by Fire Consultant Van D. Tuley, IAAI-CFI (V). A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment of the involved LLV.

2. The fire originated in the area of the charcoal canister for the EVAP system, which was positioned behind the left headlight assembly. The charcoal canister had been destroyed by the fire and was no longer present on the vehicle. Fire patterns observed on the front grill and in the engine compartment were consistent with a fire originating in the area of the charcoal canister for the EVAP system.
3. The specific ignition sequence and cause of the fire was determined to be due to a fire originating in the area of the charcoal canister for the EVAP system with a possible leak in the charcoal canister or, if the fuel tank had been overfilled, resulting in gasoline back feeding into the charcoal canister and causing excessive vapors in the engine compartment, with multiple ignition sources located throughout the engine compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. Severe fire damage was observed to the engine compartment. The hood and left front fender had been destroyed by the fire and were no longer present on the vehicle. The grill area was severely fire damaged. The left headlight assembly had been destroyed, and the area of the grill where the headlight assembly had been located had been destroyed. Fire patterns observed on the grill assembly reflected fire progression outward from the area of the left headlight assembly. The bulkhead between the engine compartment and interior compartment had also been destroyed by the fire.

The windshield assembly had also been destroyed and was no longer present on the vehicle. The roof of the structure sustained severe fire damage over the interior compartment of the vehicle.

Examination of the right side of the vehicle revealed severe fire damage to the right front fender. The right front tire had also been destroyed by the fire. The driver's door was open and had sustained moderate fire damage.

Examination of the rear of the vehicle revealed severe fire damage to the roll-up cargo door.

Examination of the left side of the vehicle revealed that the front fender had been destroyed by the fire and was no longer present on the vehicle. The door and window area had also sustained severe fire damage.

Interior Inspection:

Severe fire damage was observed throughout the interior of the vehicle. The driver's area and mail sorting table next to the driver's seat, dashboard, and floorboard were severely fire damaged. The roof over the driver's seat was destroyed by the fire. The rear cargo area had also sustained severe fire damage.

Engine Compartment Inspection:

This vehicle was equipped with a 2.2L four-cylinder engine with standard ignition coil. Severe fire damage was observed throughout the engine compartment. All combustible materials, to include hoses, belts, and wiring insulation had been consumed by the fire. The battery had been destroyed and was no longer present in the engine compartment. The battery cables were severely fire damaged. Examination of the electrical wiring in the engine compartment did not reveal any indications of adverse electrical activity that would have contributed to the cause of the fire.

Undercarriage Inspection:

Examination of the undercarriage revealed severe fire damage in the area of the engine compartment.

Fuse Panel Inspection:

Both the fuse block in the engine compartment, and the fuse panel that had been mounted on the bulkhead, below the steering column, had been destroyed by the fire.

Area of Fire Origin:

The fire originated in the area of the charcoal canister for the EVAP system, which was positioned behind the left headlight assembly. The charcoal canister had been destroyed by the fire and was no longer present on the vehicle. Fire patterns observed on the front grill and in the engine compartment were consistent with a fire originating in the area of the charcoal canister for the EVAP system.

Potential Contributing Factors:

The contributing factors for a fire originating in the area of the charcoal canister for the EVAP system would be a possible leak in the charcoal canister or, if the fuel tank had been overfilled, resulting in gasoline back feeding into the charcoal canister and causing excessive vapors in the engine compartment, with multiple ignition sources located throughout the engine compartment.

Evidence Collected:

No evidence was collected from the scene.

Interviews:

The driver of the LLV, Mr. , indicated that as he was driving the LLV on I-485 near exit 64B, he observed smoke coming from the engine compartment. He stated that he pulled over to the side of the road and then observed fire coming from the engine compartment. He attempted to contact Mr. at the Ballantyne Post Office but was unsuccessful.

Vehicle Maintenance Records:

A review of the vehicle maintenance records for LLV 4317833, provided by the VMF in Charlotte, North Carolina, reflected that the last preventative maintenance that was performed on the vehicle was on May 9, 2019. The mileage at the time of the last preventative maintenance was approximately 184,220.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Van D. Tuley

Van D. Tuley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1
Front view of the LLV.



Photograph 2
Driver's side of the LLV.



Photograph 3

Rear view of the vehicle.



Photograph 4

Left side of the vehicle.



Photograph 5

Driver's seat and mail sorting table in the passenger compartment.



Photograph 6

Cargo area of the vehicle.



Photograph 7

Engine compartment of the vehicle.



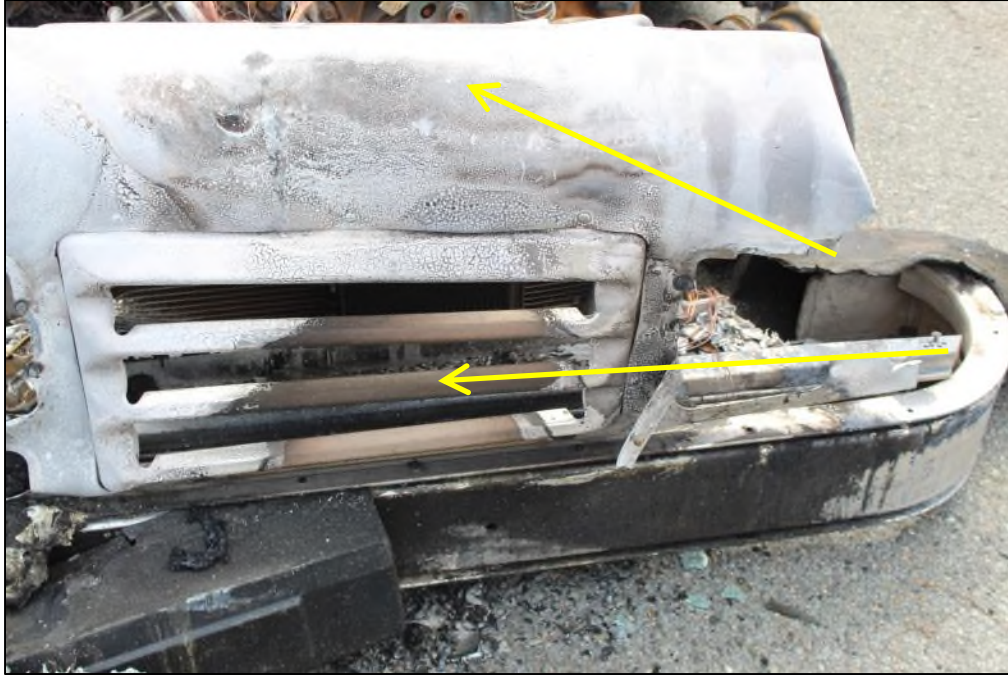
Photograph 8

Location behind the left headlight assembly where the charcoal canister for the EVAP system had been located.

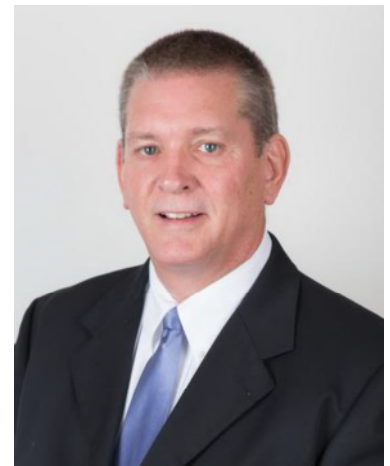


Photograph 9

Grill assembly showing fire patterns spreading outward from the area where the left headlight assembly and EVAP charcoal canister were located.



Curriculum Vitae



Van D. Tuley, IAAI-CFI

Fire Consultant

Fire Division/Charlotte District

Background

Mr. Tuley attended the University of Evansville, where he earned his M.S. degree in Criminal Justice and his B.S. degree in Law Enforcement. Mr. Tuley has over 30 years of combined investigative experience as a police officer and detective for the Police Department in Portage, IN, and as a special agent with the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). He is a Certified Fire Investigator (CFI) through the International Association of Arson Investigators (IAAI) and a licensed private investigator in multiple states. In addition, he has testified as an expert witness in both federal and state court proceedings as well as depositions involving the investigation of fires.

Contact Information

(704) 896-6227

vdtuley@rimkus.com

5900 Harris Technology
Blvd., Suite P
Charlotte, NC
28269

As a forensic consultant, Mr. Tuley specializes in the determination of the origin and cause of fires and explosions involving residential and commercial structures, as well as cases involving motor vehicles and other conveyances. He also is responsible for coordinating logistics during multi-party examinations for large-loss investigations.

Prior to joining Rimkus, he worked with the ATF for over 24 years. During the last 15 years of his tenure he responded to approximately 500 fire scenes as an ATF-CFI, including residential and commercial structures. He was also a member of the ATF's National Response Team for approximately 16 years, responding to major fire and explosion losses throughout the U.S. as a Certified Explosives Specialist.

Throughout his career, Mr. Tuley has coordinated and instructed continuing education training seminars in fire investigation for state and local fire investigators and law enforcement personnel tasked with the investigation of fire and explosion incidents. To stay up-to-date on the latest developments in his fields of expertise, he is an active member of IAAI (the national organization as well as the North Carolina and South Carolina chapters).



Rimkus Consulting Group, Inc.
1661 East Camelback Road, Suite 124
Phoenix, AZ 85016
(866) 552-6758 Telephone
(602) 216-2201 Facsimile

August 9, 2016

Re: RCG File No: 01707627
LLV Number: 4318404
VMF Location: 4949 East Van Buren Street in Phoenix, Arizona
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 4318404 that occurred Eastbound on Chandler Boulevard to Gilbert Road in Chandler, Arizona on May 01, 2016. In the course of our work, we examined and documented the fire-damaged vehicle on May 17, 2016, and interviewed the driver on May 18, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 4949 East Van Buren Street in Phoenix, Arizona on May 17, 2016. Our interview with the carrier took place at 123 West Chandler Road in Chandler, Arizona on May 18, 2016. The work to complete this assignment was performed by Fire Consultant Joseph Jadowski, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the left side (mail side) of the engine compartment.

3. An examination of the area of fire origin indicated that the rubber fuel lines had been consumed and there were indications of oil leaking within the area. There was no adverse electrical activity observed in the area of origin.
4. The specific ignition sequence and cause of the fire was determined to be a hot surface ignition of an ignitable liquid at the exhaust manifold. However, it could not be conclusively determined if the first material ignited were gasoline vapors or engine oil.

Observations

Exterior Inspection:

We began our examination of the LLV 4318404 USPS vehicle by conducting a complete examination of the exterior of the vehicle. We observed fire-related damage to the hood, front fenders, passenger and driver's side doors, windshield, driver's side glass, passenger's side glass, and the passenger and cargo compartment roof system. The headlight assemblies, front grill, bumper, wheels, tires, passenger side cargo compartment, cargo door, taillight assemblies, rear bumper and driver's side cargo compartment sustained no observable evidence of fire-related damage. The fire patterns were visible on the exterior of the vehicle indicating the fire originated within the engine compartment.

Interior Inspection:

The interior examination of the vehicle, including the operator's compartment roof system, bulkhead (firewall) steering system, dash, instrument panel, fuse panel, wiring, wiring harnesses, ignition, ECM (Electronic Control Module), front seat, passenger side console, front door panels, interior cargo panels, and roof system sustained severe fire damage as a result of the fire extending into this area from the engine compartment.

Engine Compartment Inspection:

The examination of the engine compartment revealed extensive fire-related damage. The 1994 Gruman GMC LLV 4318404, VIN 1GBCS1046R2924805, was powered by an inline mounted gasoline-fuel injected, four-cylinder engine with rear wheel drive and an automatic transmission. We inspected the radiator, radiator shroud, air intake system, fuel filter system, fuel lines, belts, hoses, battery, battery cables insulation, battery box, electrical wiring, engine compartment electrical wiring harness, master cylinder, and all plastic components within the upper engine compartment which sustained severe fire damage. The lower engine compartment showed evidence of oil leakage although the engine dipstick indicated the oil level was adequate. The engine block, heads, exhaust manifold, alternator, brake booster, transmission, and remaining noncombustible components also sustained severe fire related damage. There was no physical

evidence observed that would indicate that the LLV was equipped with a High Energy Ignition (HEI) Distributor or that this component contributed to the fire.

Undercarriage Inspection:

Examination of the undercarriage revealed no observable physical evidence of fire-related damage from the bell housing rearward. The undercarriage below the engine compartment sustained fire related damage to lower frame, control arms steering system and lower engine compartment. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

Examination of the fuse panel located within the driver's side operator's compartment revealed severe fire damage to the fuse panel and the entire passenger and engine compartments electrical system and electrical wiring harnesses.

Area of Fire Origin:

The area of fire origin was determined to be within the engine compartment.

Potential Contributing Factors

Prior to our inspection of the vehicle and prior to the RCG assignment being received, the LLV 4313395 had recent repair work performed involving the battery and charging system. There was no observed work to the fuel system.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interviews:

On Wednesday, May 18, 2016, an on-site interview was conducted with the driver regarding the circumstances of the fire that occurred at the USPS vehicle on May 1, 2016. The USPS carrier and operator of the vehicle reported the following:

- He recalled coming to work on May 01, 2016; he loaded the vehicle with mail to be delivered.
- He stated he left the post office parking lot and drove approximately 10 miles. At that time there were no indications of any gasoline odors or noticeable mechanical issues with the vehicle.

- He stated he was driving east on Chandler when the vehicle began to lose power.
- He stated he was driving at approximately 40 miles per hour as the vehicle began to slow down; he began to pull off the road when the engine shut down.
- He stated he stopped the vehicle, got out of the vehicle, and called his supervisor. While on the phone with his supervisor, he observed white smoke emanating from the operators compartment of the vehicle.
- He started walking toward the front of the vehicle. As he approached the vehicle, he heard a “whoosh” noise and the engine compartment of the vehicle was on fire. At that point he hung up with his supervisor and called the fire department to report the incident.
- He stated that by the time the fire department arrived, the entire front engine compartment and operators compartment were fully involved with fire.

Service Records:

A review of the service records indicated that the LLV was last serviced on March 7, 2016, for reported battery/charging issues. There is no other information available that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of Usps Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Joseph M. Jadowski

Joseph M. Jadowski, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 9, 2016
RCG File No. 01707627

Photograph 1

View of the fire-related damage to the exterior of the LLV 4318404.



Photograph 2

View of the fire-related damage to the exterior of the LLV 4318404.



August 9, 2016
RCG File No. 01707627

Photograph 3

View of the fire-related damage to the exterior of the LLV 4318404.



Photograph 4

View of the fire-related damage to the exterior of the LLV 4318404.



August 9, 2016
RCG File No. 01707627

Photograph 5

View of the fire-related damage to the exterior of the LLV 4318404.



Photograph 6

View of the fire-related damage to the interior cargo compartment of the LLV 4318404.



August 9, 2016
RCG File No. 01707627

Photograph 7

View of the fire-related damage to the operator's compartment of the LLV 4318404.



Photograph 8

View of the fire-related damage to the operator's compartment of the LLV 4318404.



August 9, 2016
RCG File No. 01707627

Photograph 9

View of the fire-related damage to the engine compartment of the LLV 4318404.



Photograph 10

View of the fire-related damage to the engine compartment of the LLV 4318404.



August 9, 2016
RCG File No. 01707627

Photograph 11

View of the fire-related damage to the engine compartment of the LLV 4318404.



Photograph 12

View of the rear under carriage of the LLV 4318404.



August 9, 2016
RCG File No. 01707627

Photograph 13

View of the front under carriage, and engine compartment of the LLV 4318404.



Photograph 14

View of the front under carriage, engine compartment of the LLV 4318404.



August 9, 2016
RCG File No. 01707627

CVs



**JOSEPH M. "MICK" JADLOWSKI — IAAI-CFI, NAFI-CFEI, NAFI- CVFI, PRO BOARD
CERTIFIED
FIRE CONSULTANT**

Mr. Jadowski has an extensive background in fire and explosion origin and cause investigation which includes over 7 years of private sector forensic consulting and greater than 23 years on the City of Omaha Fire Department with 10 years specializing in investigations. He has investigated over 1,000 fires and made over 50 felony arrests for arson and other related crimes during tenure with the Omaha Fire Department. He has conducted fire and explosion investigations that include commercial, residential, and automotive. Additionally, he has vast experience in failure analysis and products liability claims of household appliances.

He has completed numerous educational seminars and continuing education courses. In addition to his educational achievements, he has experience in origin and cause investigations, researching fire code violations, and assisting with failure analysis of appliances.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Vehicle Fire Investigator, CVFI (#13297-6862v): National Association of Fire Investigators

Certified Fire Investigator, CFI (#13-004): International Association of Arson Investigators

Certified Fire and Explosion Investigator, CFEI (#132976862): National Association of Fire Investigators

Pro Board Certified Fire Investigator (#251967): National Board on Fire Service Professional Qualifications

International Association of Arson Investigators – Member

National Association of Fire Investigators – Member

Private Investigator License in Nevada (NV PILB License #1262), Arizona (1596879), Utah (R102415), Montana (PSP-PI-10153), Washington (3664) California (PI 24783)

EMPLOYMENT HISTORY

2009 - Present

2008 - 2009

1985 - 2007

Rimkus Consulting Group, Inc.

Unified Investigations and Science

City of Omaha Fire Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus North Carolina, PLLC
5900 Harris Technology Blvd, Suite P
Charlotte, NC 28269
(704) 896-6227 Telephone
(704) 896-6228 Facsimile
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2017

April 6, 2017

Re: RCG File No: 47107759
LLV Number: 4318530
VMF Location: 7840 North Point Blvd. in Winston-Salem, North Carolina
Subject: Preliminary/Final Report

Dear

Rimkus North Carolina, PLLC was retained to examine a 1994 Chevrolet LLV 4318530, VIN 1GBCS1043R2924857. The vehicle was examined at the USPS Winston-Salem VMF located at 7840 North Point Boulevard in Winston-Salem, North Carolina. The fire incident reportedly occurred at 417 Camelot Drive in Statesville, North Carolina on February 24, 2017.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on March 2, 2017. Our work to complete this assignment was performed by Technical Fire Manager David R. Meyers, IAAI-CFI. This report and case was reviewed by National Fire Manager Thomas W. Young, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. An analysis of the observable fire patterns and physical evidence indicated that the specific area of fire origin within the engine compartment was on the driver's side of the engine compartment.
3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the damage and the lack of discernible physical evidence.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed in the engine compartment and the mail compartment. Total mass loss was observed to the windshield, engine hood assembly, dashboard, and multiple engine components. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage to the mail side compartment and smoke staining to the cargo area. Minor fire damage was observed in the cargo area. The most severe fire damage and mass loss was observed to the engine compartment, front-end assembly, dashboard area, firewall, steering wheel assembly, and driver's seat.

The most severe fire damage was observed at the bulkhead, dashboard, windshield, and steering column. The burn patterns observed to the interior area progressed upward and outward from the engine compartment. After a review of the progression of the burn patterns, it was determined the fire progressed from the engine compartment into the mail side compartment through the manufactured holes in the bulkhead and due to the failure of the windshield.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L 4-cylinder gasoline engine. Severe fire damage was observed throughout the engine compartment including mass loss to the belts, hoses, wiring harnesses, and multiple components. The air filter cover and filter were examined and observed with severe fire

damage. Electrical wires that transverse the area above the air filter and carburetor were observed with severe fire damage and mass loss and were observed with thermal damage and adverse electrical activity. Due to the severe fire damage and mass loss, the electrical wiring and wire harnesses could not be eliminated as a cause of the fire. The fuel system was examined and found to be severely damaged and total mass loss to several components. The fuel filter was observed with severe fire damage and total mass loss. The fuel system was the GM model. Due to the severe fire damage and mass loss to the fuel system, a failure to the fuel system could not be eliminated.

The battery for the vehicle was located at the front right side of the engine compartment and had severe fire damage and total mass loss to the entire battery. The battery, the battery terminals and battery cables were examined and found with severe fire damage and total mass loss. Due to the severe fire damage and mass loss, the battery, battery terminals, and battery cables could not be eliminated as a cause of the fire.

The engine oil, transmission fluid, power steering fluid, and brake fluid were examined and observed to be within their normal operating range; however, water and debris did appear to be in the fluids. The carburetor was examined and observed with severe fire damage to the top portion of the carburetor where the air filter housing was mounted. Due to the severe fire damage, the carburetor and a fuel assembly could not be eliminated as a cause of the fire.

The ignition coil, ignition module, and wiring assembly were examined and observed with severe fire damage and total mass loss to the majority of the components. Due to the severe fire damage and total mass loss, the ignition coil, ignition module, and wiring assembly could not be eliminated as a cause of the fire.

The main power supply cable from the battery to the starter was examined and observed with severe fire damage and adverse electrical activity at the connection terminals at the battery and at the starter. The cable insulation was observed with total mass loss along the entire length of the circuit. Due to the severe fire damage to the power supply cable, adverse electrical activity on the cable could not be eliminated as a cause of the fire.

An examination of the engine block was conducted. No engine block damage was observed. A large hole was observed on the front casing of the timing chain cover. After an examination of the hole and the timing chain cover, it was determined that the hole was created due to direct flame impingement onto the cover from an external source. No internal failure of the timing chain was observed.

An examination of the progression of the burn patterns and severe fire damage was conducted. Based on the fire patterns observed, the front top side of the engine within the engine compartment was determined to be the area of origin. However, due to the severe fire damage and total mass loss the point of fire origin could not be determined.

Undercarriage Inspection:

Examination of the undercarriage revealed severe fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. A minimal quantity of oil was observed on the undercarriage including the exhaust and framing. The LLV was mounted on a GM frame. Minor heat damage was observed to the front-end components. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any possible leaks. The front brake assemblies were observed with severe heat damage. However, no burn progression was observed from the brake assemblies. A fire originating at the front brakes was eliminated as a cause of the fire.

Fuse Panel Inspection:

Examination of the fuse panel revealed severe fire damage and mass loss to the panel and all of the fuses. Due to the severe fire damage and mass loss, we were not able to determine if any were fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated within the engine compartment on the front top side of the engine. However, due to the severe fire damage and total mass loss to multiple components in the engine compartment, the point of fire origin could not be determined.

Contributing Factors:

The LLV reportedly was being driven at the time of the fire and the carrier reportedly smelled burning similar to plastic or rubber. The carrier stated the vehicle had good power and had no previous problems with the vehicle on the day of the fire. The vehicle was pulled to the side of the road when white smoke was observed under the engine hood and quickly turned to black smoke. The carrier observed smoke and looked into engine compartment through the engine hood seams, the carrier did not attempt to open the hood assembly. The carrier stated he observed fire on the top side of the engine but could not tell where the fire was coming from.

Three days prior to the fire, the ignition coil and ignition module were replaced due to a lack of power with the vehicle. The carrier reported that the vehicle was operating properly following the replacement of the parts and no others problems had been reported prior to the fire. Based on a review of the receipts provided by the VFM, the replacements parts were the standard parts for the vehicle and not high-output units.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

On March 2, 2017, an interview via telephone was conducted with the carrier at the Statesville post office. Mr. reported the following information:

- Mr. was the regular driver of the vehicle. He had the vehicle out all day and had no problems or issues with the vehicle prior to the fire.
- Mr. stated he had pulled into a subdivision to make deliveries and smelled smoke. He thought someone may have been burning in the area. As he continued, to make deliveries the smell of smoke continued and got more obvious. He stated he stopped the vehicle, got out and looked around and did not see any smoke or problems. He stated that when he got back in the vehicle, he then observed white smoke coming from within the engine compartment from the vents on the hood assembly. He got out of the vehicle and the smoke quickly turned black and thickened.
- Mr. stated he looked through the seams in the hood assembly and could observe fire on the top of the engine but could not tell where the fire was coming from. He stated he did not attempt to open the hood. He stated he immediately went to the rear cargo area and started removing the mail from the vehicle.
- Mr. stated a neighbor came over with a fire extinguisher and attempted to extinguish the fire but was unsuccessful. The Statesville Fire Department responded and extinguished the fire.
- Mr. stated that they have had several mechanical issues with this vehicle in the past, but the vehicle had been operating properly prior to the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to

us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NORTH CAROLINA, PLLC

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Thomas W. Young

Thomas W. Young, IAAI-CFI (V)
National Fire Manager

Attachments: Photographs, CVs

April 6, 2017
RCG File No. 47107759

Photograph 1

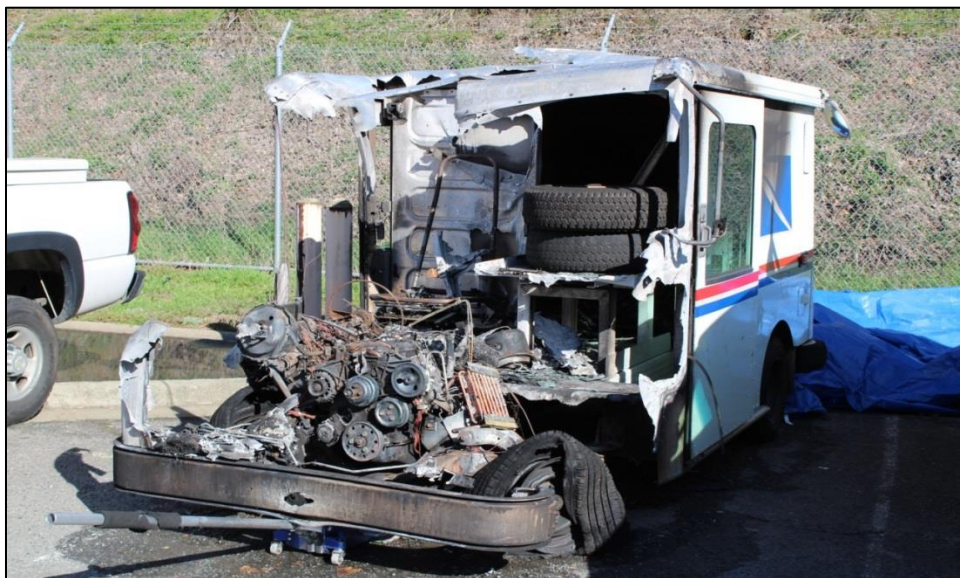
1994 Chevrolet LLV 4318530 2.2L VIN: 1GBCS1043R2924857

Severe fire damage to the engine compartment and mail side compartment.



Photograph 2

Severe fire damage to the front-end, engine compartment and less severe toward the mail side compartment and cargo compartment areas.



April 6, 2017
RCG File No. 47107759

Photograph 3

Driver's side of the vehicle; observe the progression of the burn patterns from the front towards the rear.



Photograph 4

The mail side of the vehicle; minimal fire damage.



April 6, 2017
RCG File No. 47107759

Photograph 5

The rear of the vehicle; no fire damage.



Photograph 6

The rear cargo area, observe the progression of the burn patterns into the area.



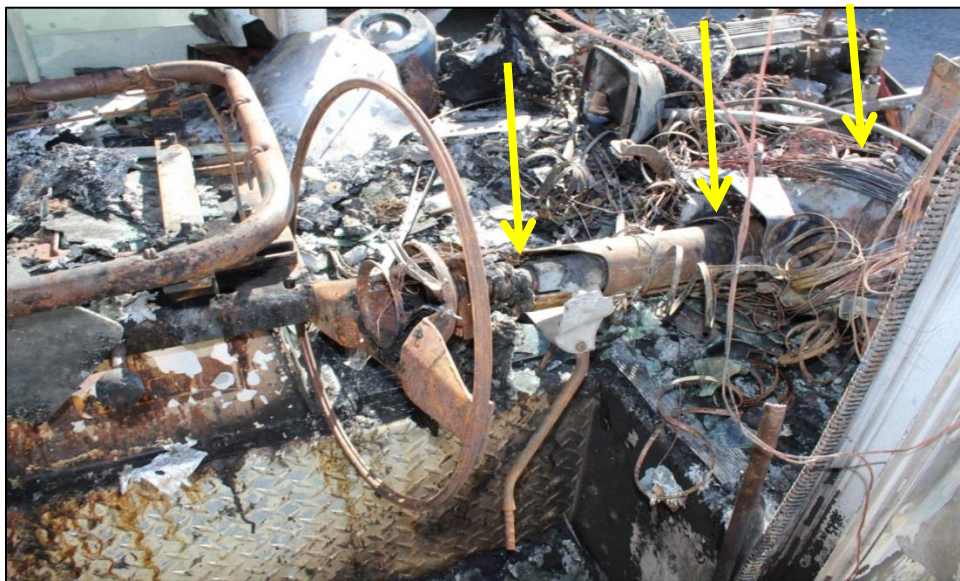
Photograph 7

The mail side compartment, driver's seat and steering column; observe the progression of the burn patterns from the front towards the rear.



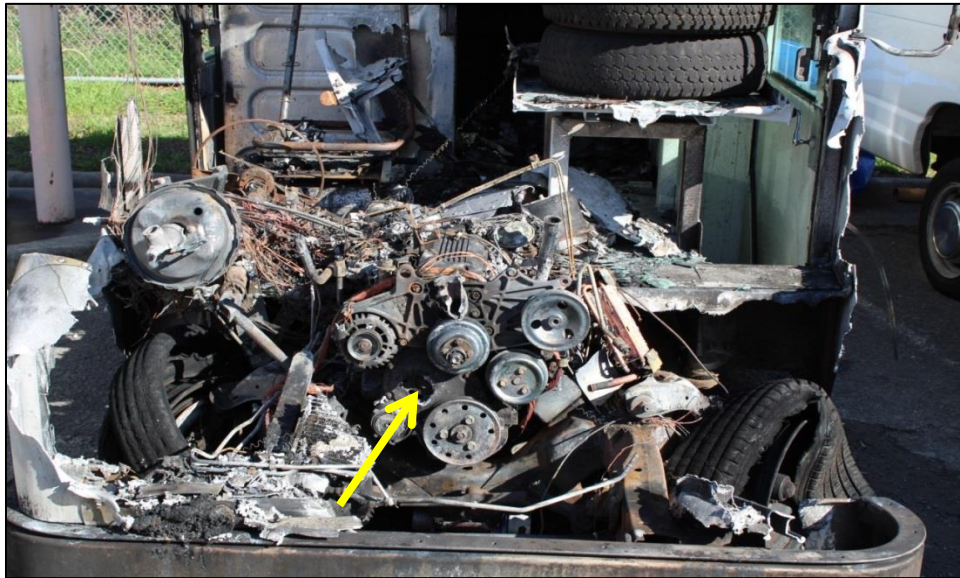
Photograph 8

A closer view of the steering column and dashboard area; observe the severe fire damage and progression of the burn patterns extending from the engine compartment.



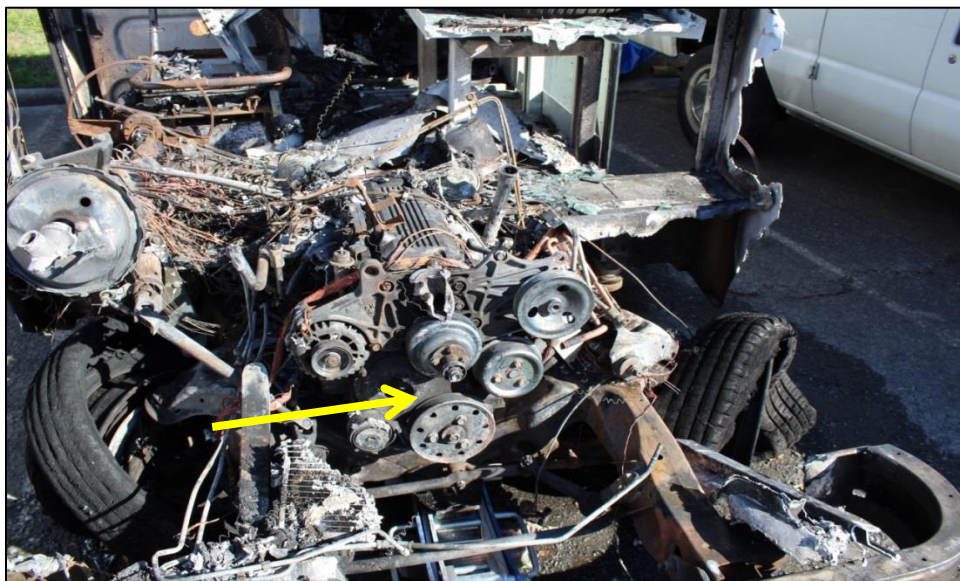
Photograph 9

The front-end and engine compartment; observe the severe fire damage and mass loss high on the engine and the hole in the timing chain cover.



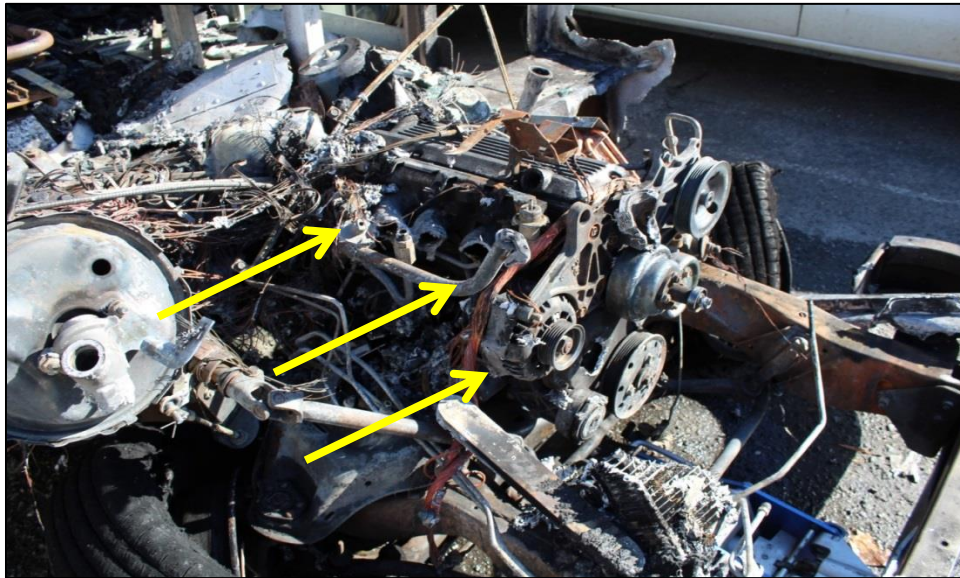
Photograph 10

A closer view of the engine compartment; observe the severe fire damage and mass loss high on the engine and the hole in the timing chain cover.



Photograph 11

The top side of the engine compartment; observe the severe fire damage and mass loss to multiple components in the area.



Photograph 12

The driver's side of the engine compartment; observe the severe fire damage to the exhaust manifold, ignition components, and the alternator housing.



April 6, 2017
RCG File No. 47107759

CVs



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



**THOMAS W. YOUNG, I.A.A.I., C.F.I., C.F.E.I., C.F.I.I.
NATIONAL FIRE DIVISION MANAGER**

Mr. Young's professional career includes 27 years with St. Petersburg Fire and Rescue. In that capacity he has been involved in many different emergency service positions including Fire Fighter, Driver Engineer, Station/Line Officer, Public Information Officer, Community Affairs Director, Deputy Fire Marshal and Fire Investigations Task Force Supervisor. As a Florida State Certified Fire Inspector he oversees code compliance, crowd management, fire safety analysis, special events, safety management, commercial and industrial fire emergency operations and reviewing fire contingency plans.

Mr. Young has completed and maintains state national and international certifications as Fire Investigator, Fire Investigator Instructor, Fire Inspector, Fire Officer, and Basic Fire Instructor. He has also authored articles in fire engineering publications, as well as firehouse and local municipality newsletters. Furthermore, he participates in, designs, and instructs educational seminars and continuing educational courses. Moreover, he has conducted Live Burn Testing to include appliances, vehicles, and closed room fire tests and studies.

Mr. Young supervised the cause and origin efforts for the St. Petersburg Fire and Rescue for over 10 years. He has testified as an expert witness in court cases and has testified before the Grand Jury. He has also been involved in special projects such as juvenile fire setters, an educational intervention program that he developed. Additionally, he has served as the department's shipboard firefighting instructor. He has a strong marine investigative background.

Mr. Young has been recognized for his achievements by being the recipient of awards that include, Fire Officer of the Year, and The State of Florida's, Florida Fire Marshals Public Educator of the Year.

As division manager Mr. Young oversees the fire investigation efforts, which include training, hiring, and supervising a team of highly trained and experienced fire consultants with Rimkus Consulting Group, Inc.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.S. - Fire Science, St Petersburg College, St. Petersburg, Florida (1999)
Certified Fire Investigator - International Association of Arson Investigators (2004)
Certified Fire and Explosion Investigator - National Association of Fire Investigators (2001)
Florida State Certified Fire Safety Inspector (since 1989)
Florida State Certified Fire Officer (since 1989)
Nationally Certified Fire Investigator Instructor (2001)
Certified Fire Investigator Instructor - National Association of Fire Investigators
Florida State Certified Fire Service Instructor (since 1989)
Computer Fire Modeling - National Association of Fire Investigators (2003)
University of Florida, Fire Marshal Association of North America Fire Protection Institute Training
U.S. Department of Transportation Maritime Administration/Shipboard Firefighting
Member of NSPII – National Society of Professional Insurance Investigators
National Fire Protection Association Member
National Fire Academy - Designing Life Safety Strategies & Curriculum Development
Florida Fire Marshals Association
Florida Advisory Committee on Arson Prevention Member and Annual Conference Attendee
Fire Findings Laboratories/Gas and Electric Appliance Fires (2009)
I.A.A.I. Florida Chapter Regional Director (PAST)
Forensic X-Ray Equipment Certified and Equipment Safety Manager – Golden Engineering (2006)
National Board of Fire Service Professional Qualifications 1033 NFPA
I.A.A.I. Annual Conference – Orlando (2010)
Diversified Fire Training Code Compliance (2010)
Currently maintains Private Investigator agency licensing for all required states in the Eastern Region
I.A.A.I. Annual Conference – Las Vegas (2011)
Litigation Seminar National Association of Fire Investigation (2011)
Automotive Repair Technician Certification – Penn Foster College Fall (2012)
I.A.A.I. Annual Conference – Orlando (2013)



Rimkus Consulting Group, Inc.
650 N.E. Holladay Street, Suite 1600
Portland, Oregon 94232
(877) 677-6157 Telephone
(425) 650-4777 Facsimile

November 29, 2018

Re: RCG File No: 76000167
LLV Number: 4318761
VMF Location: 1050 25th Street SE Salem, Oregon
Subject: Preliminary/Final Report

On October 3, 2018, a fire involving USPS LLV 4318761 reportedly occurred at 27100 Salmon River Drive in Grande Ronde, Oregon. The vehicle was manufactured by General Motors in 1994 and was a Grumman model LLV-93 RH with VIN 1GBCS1043R2925118.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Salem, Oregon VMF located at 1050 25th Street Southeast in Salem, Oregon. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on October 12, 2018. The vehicle examination was conducted by Fire Consultant Jeremy "Christopher" Lyman, IAAI-CFI (V). A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations" and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment of the involved LLV.
2. The specific area of origin was at the exhaust manifold on the left side of the engine. Engine oil was sprayed onto the exhaust manifold when an engine rod penetrated through the engine block.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a thrown rod through the engine block causing a hole that allowed engine oil to be expelled onto the hot exhaust manifold.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The front grill and lights of the LLV were observed to be intact with no fire damage. No damage was observed to the exterior cargo area of the vehicle. Based on the fire patterns observed, it was determined the fire initiated within the engine compartment near the bulkhead/dashboard. The wheel and tires appeared to be of proper size and no fire or heat damage was observed. The fuel door and filler line appeared intact and undamaged. The windshield and all windows were intact and undamaged.

Interior Inspection:

We examined the interior of the vehicle. We did not observe any smoke, heat, or fire damage to the interior components of the vehicle. There was no physical evidence observed on the interior of the LLV that would have caused or contributed to the cause of the fire.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. We observed minimal fire and heat damage to the heatshield insulation near the driver's side bulkhead and to the interior side of the hood. The metal dipstick was missing from the oil cap as a result of the engine rod being thrown inside the engine block. The transmission contained fluid within the manufacturer's recommendation level. We did not observe any electrical arcs or failures with the vehicles electrical system.

An examination of the engine block was conducted. A large hole was observed on the left side of the engine block directly behind the exhaust manifold. The hole was parallel with the engine crank shaft and appeared to have been blown from the inside out by a piston rod failure. A large quantity of oil was observed on the back side of the exhaust manifold. Based on the fire patterns observed, the left side of the engine within the engine compartment was determined to be the area of origin.

The battery for the vehicle was located at the front driver's side of the engine compartment. The battery, battery terminals, and battery cables were examined and

found intact; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire.

Undercarriage Inspection:

No fire damage was observed to the underside of the vehicle. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head. All four tires were intact.

Fuse Panel Inspection:

The fuse panel positioned below the instrument panel in the dashboard on the driver's side sustained no fire damage. No evidence of adverse electrical activity was noted. The respective wiring harness associated with the fuse panel was inspected and was observed intact and undamaged. Examination of the fuse panel did not reveal any fire damage or blown fuses.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated in the engine compartment on the left side of the engine at the exhaust system.

Potential Contributing Factors:

The LLV reportedly was being driven at the time of the fire, the carrier stated she saw smoke coming from under the front of the vehicle.

A large hole was observed on the left side of the engine block directly behind the exhaust manifold. The hole was parallel with the engine crank shaft and appeared to have been blown from the inside out by a piston rod failure. A large quantity of oil was observed on the back side of the exhaust manifold.

The evidence observed is consistent with a catastrophic failure of the engine. The most probable cause for the fire was the ignition of leaking engine oil vapor by a competent ignition source. The competent ignition source in the area of origin would have been the hot surfaces of an engine component. The engine oil vapor would have escaped when the fractured connecting rod pierced through the left side of the engine block. A fractured connecting rod is most commonly caused by inadequate lubrication or over

revving of the engine. However, there are numerous other causes that may create or contribute to this condition.

Evidence Collected:

Two samples of engine oil were collected for potential analysis in the future.

Lab Results:

The oil samples collected were submitted to Analytical Forensics Associates for analysis. The analysis was conducted for engine wear analysis and contaminants. Spectrochemical and physical analysis of the engine oil indicated critical conditions. Critical levels of iron and aluminum and abnormal levels of chromium were also detected. Lead, copper, tin, silicon, and sodium, were each indicted. These elements are generally associated with cylinder area wear and bearing or bushing wear. Coolant additives and abrasives (dirt) were present. The water content was moderate at 0.4 percent by volume. The viscosity was 10.3 Centistokes at 100 degrees Celsius with a grade of 30. The sample tested negative for the presence of glycol and the fuel content was less than 1.0 percent by volume.

Witness Statement:

The LLV reportedly was being driven at the time of the fire. The carrier stated that she smelled smoke and the cabin filled with smoke. The carrier exited the vehicle and observed fire dripping from the engine compartment onto the ground. The fire department responded and opened the hood and found no fire.

Service Records:

A review of the involved LLV service records was requested and reviewed. The LLV received a replacement engine on August 7, 2018, work order 2287590. Following installation, the vehicle would shut-off and would not start. When started, a rod was thrown through the engine block. A second engine replacement was ordered.

On August 15, 2018, an additional engine was installed, work order 22919361. It was noted on the work order that the new engine was noisy and misfired.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jeremy C. Lyman

Jeremy C. Lyman, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Lab Report, Curriculum Vitae

November 29, 2018
RCG File No. 76000167

Photograph 1
Front of vehicle.



Photograph 2
Driver's side of the vehicle.



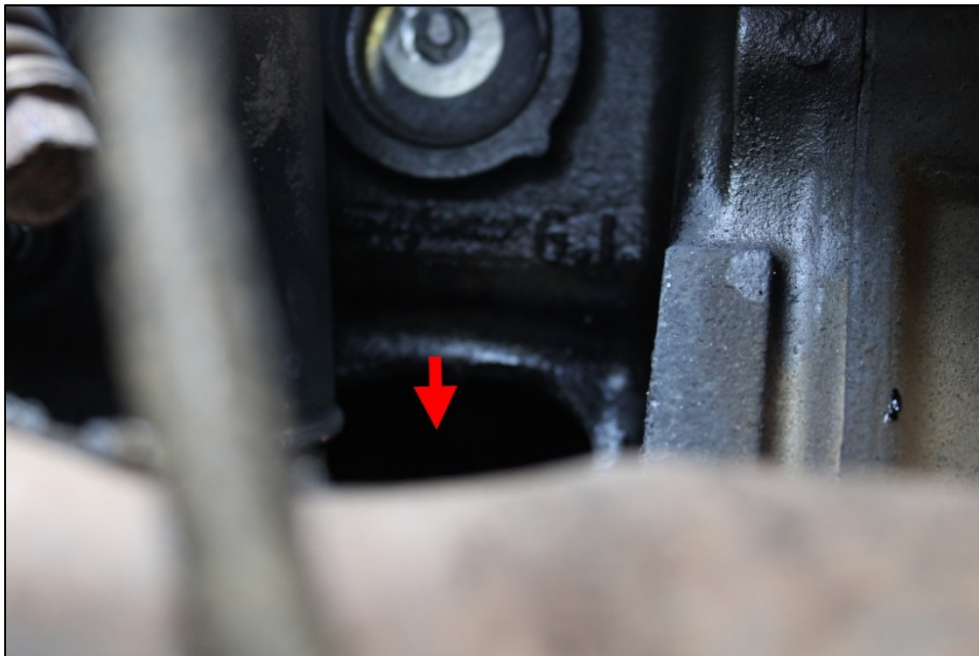
Photograph 3

Heatshield on firewall of engine compartment affected by heat and fire.



Photograph 4

Hole observed on the left side of the engine block.



November 29, 2018
RCG File No. 76000167

Photograph 5
The battery (undamaged).



Photograph 6
The engine compartment.

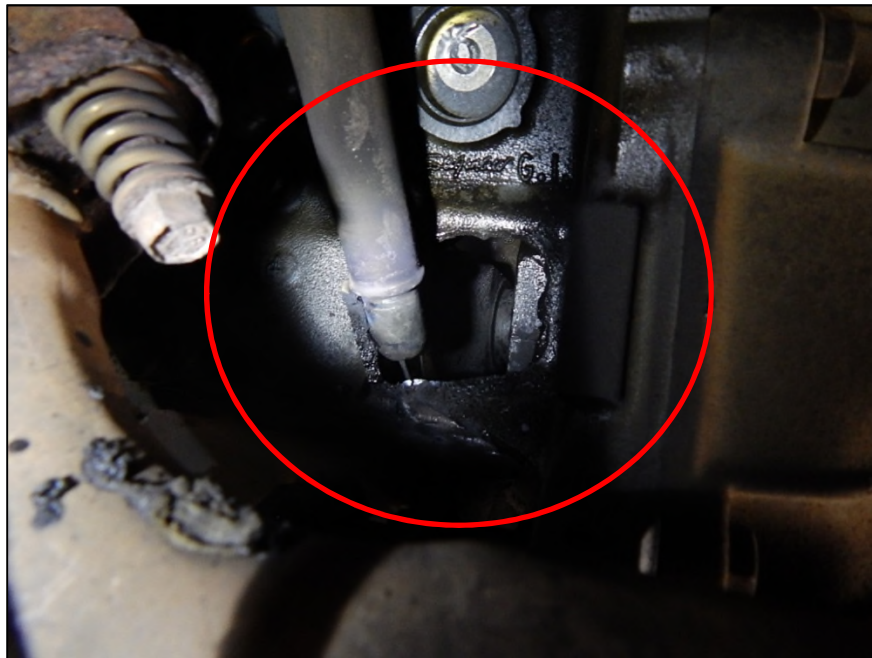


November 29, 2018
RCG File No. 76000167

Photograph 8
The undercarriage.



Photograph 9
The engine block (hole).



November 29, 2018
RCG File No. 76000167

Lab Report

ANALYTICAL TEST REPORT
Case #: 1810-1151

Page 1 of 2

26 October 2018

David Meyers, IAAI-CFI
Rimkus Consulting Group, Inc.
Via Electronic Mail Only
drmeyers@rimkus.com

Subject

Analysis of Vehicular Fluid for Component Wear.

Case Information

Rimkus Case #: 76000167. Insured: United States Postal Service. Vehicle: 1994 Grumman LLV. VIN: LLV 4318761. Location: Salem, OR. Loss Date: 3 October 2018.

Background Information

On 22 October 2018 Analytical Forensic Associates received from David Meyers via FedEx (7735 2200 7957) a zipper lock bag containing a screw top jar with a dark brown oily liquid identified as engine oil removed from the vehicle.

Analytical Forensic Associates was requested to check the sample for evidence of component wear*.

Analytical Test Methods and Results

The sample was submitted to Bureau Veritas of Suwanee, Georgia for component wear analysis.

ANALYTICAL FORENSIC ASSOCIATES

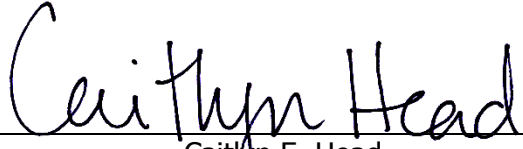
3100 Five Forks Trickum Road • Suite 104 • Lilburn, GA 30047
Phone: 770.982.0210 or 877.FireLab • www.afalabs.com

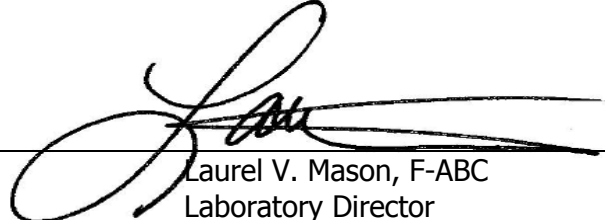
Analytical Test Methods and Results (continued)

Spectrochemical and physical analysis of the engine oil indicates critical conditions. Critical levels of iron and aluminum and abnormal levels of chromium, lead, copper, tin, silicon and sodium were each indicated. These elements are generally associated with cylinder area wear and bearing or bushing wear. Coolant additives and abrasives (dirt) are present. The water content is moderate at 0.4 percent by volume. The viscosity is 10.3 Centistokes at 100 °C with a grade of 30. The sample tested negative for the presence of glycol and the fuel content is less than 1.0 percent by volume.

Discussion and Conclusion

Spectrochemical and physical analysis of the engine oil indicates critical conditions. Critical levels of iron and aluminum and abnormal levels of chromium, lead, copper, tin, silicon and sodium were each indicated. Coolant additives and abrasives (dirt) are present. The water content is moderate at 0.4 percent by volume. These results are based upon the information provided at the time of testing.

Report Prepared By: 
Caitlyn E. Head
Forensic Scientist

Technical Review By: 
Laurel V. Mason, F-ABC
Laboratory Director

Evidence Disposition: The sample was consumed during testing.

**Wear analysis is not within the A2LA Scope of Accreditation.
This report shall not be reproduced, except in full, without written approval of the testing laboratory.*

ANALYTICAL FORENSIC ASSOCIATES

3100 Five Forks Trickum Road • Suite 104 • Lilburn, GA 30047
Phone: 770.982.0210 or 877.FireLab • www.afalabs.com

November 29, 2018
RCG File No. 76000167

Curriculum Vitae



JEREMY “CHRIS” LYMAN, IAAI – C.F.I. FIRE CONSULTANT

Mr. Lyman is currently in-process of completing his Bachelor of Science in Fire Science Administration with Eastern Oregon University. His experience and knowledge covers over 20 years in the fire service industry with the last 12 years as a full-time fire investigator, fire captain, deputy fire marshal, and safety professional. He is a Certified Fire Investigator (C.F.I.) through the International Association of Arson Investigators (IAAI) and a Certified Fire Inspector II through the International Code Council. Mr. Lyman is experienced in the interpretation and enforcement of the International Fire Code as it relates to fire, life safety and egress in existing buildings and new construction as well as fire protection systems.

In addition to over 400 fire investigations, Mr. Lyman’s areas of expertise include fire origin and cause investigations, researching codes and providing training and evaluating fire investigators. Mr. Lyman has taught fire investigation and related courses through Umpqua Community College. He has conducted fire and explosion investigations throughout his career to include commercial, residential, heavy equipment and automotive related property.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator (C.F.I.) International Association of Arson Investigators (I.A.A.I.)
Certified Fire Investigator – Vehicle (C.F.I.) (V) (I.A.A.I.)
Certified Fire Inspector II – International Code Council – Certification Number: 5264372
Licensed Private Investigator – Oregon, Washington
International Association of Arson Investigators – I.A.A.I. – Member
International Association of Arson Investigators – I.A.A.I. Washington Chapter – Member
International Association of Arson Investigators – I.A.A.I. Oregon Chapter – Member

EMPLOYMENT HISTORY

2017 – Present	Rimkus Consulting Group, Inc.
2015 – 2017	Pierce County Fire Prevention Bureau
2013 – 2015	Michael Baker International
2012 – 2013	Dyncorp International
2010 – 2012	Chris Lyman Consulting
2011 – 2012	Umpqua Community College
2009 – 2012	Oregon State Fire Marshal
2006 – 2007	Oregon State Fire Marshal
2003 – 2005	Kellogg Brown & Root Services
2000 – 2001	EG&G Defense Materials
1996 – 1997	Moffet Federal Airfield (NASA)
1991 – 1996	United States Air Force



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
7501 South Quincy Street, Suite 160
Willowbrook, Illinois 60527
(866) 746-5871 Telephone
(630) 321-1847 Facsimile

May 25, 2018

Re: RCG File No: 50905578
LLV Number: 7200197
VMF Location: 740 South Canal Street Chicago, Illinois
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine 1987 LLV 7200197, VIN 1GBBS10E9H2300189. The vehicle was examined at the USPS Chicago Vehicle Maintenance Facility located at 740 South Canal Street in Chicago, Illinois. The fire incident reportedly occurred at West Belden Avenue and North Kedzie Boulevard in Chicago, Illinois on April 26, 2018.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on May 10, 2018. Our work to complete this assignment was performed by Fire Consultant David A. Mager, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated within the engine compartment of the involved LLV.

2. The specific area of origin was at and around a battery cable routed directly below the power steering pump assembly that sustained an adverse electrical event.
3. The specific ignition sequence and cause of the fire was determined to be an adverse electrical event at the large diameter battery cable that was identified routed through where a retaining clamp would have been located. The cable exhibited physical evidence consistent with adverse electrical activity and the cable exhibited physical evidence of mechanical damage at the location where a retaining clamp should have been located. The retaining clamp was missing from its location. The cable had abraded against the motor mount, compromising the insulation. The cable then arced to the motor mount igniting the combustible materials in the area.
4. Wear and degradation of components allowed an unfused adverse electrical event to develop at the battery hot lead where it was in direct contact with the motor mount within the engine compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. There was substantial fire damage to the vehicle at the bulk head of the engine compartment. A portion of the hood had been consumed by fire. The bulk head had been consumed by fire up to the mail side of the passenger compartment. The driver's side front fender had been partially consumed by fire. There was smoke staining to the exterior of the vehicle around the vent openings and cargo door. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

Examination of the interior of the vehicle revealed extensive fire damage to the driver's side of the bulk head. The steering column was damaged by fire. The electrical

conductors within the steering column had some insulation on them. The turn signal switch was damaged by fire but intact. This indicated that the steering column was attacked by the fire. The dashboard had been consumed by fire. We identified the remains of the headlamp switch. It sustained significant fire damage. Burn patterns indicated the switch was attacked by the fire and not the cause.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L engine on a GM frame. The vehicle had a standard coil ignition.

The battery for the vehicle was located at the right front side of the engine compartment. The battery, battery terminals and battery cables were fire damaged. The negative battery connection had melted off of the battery and was hanging loose. The insulation had burned off the entire length of the cable.

The positive battery cable connection was melted to the remains of the battery. The insulation had burned away from the cable with the exception of approximately six inches near the starter. We traced the positive cable and identified electrical arcing where the cable came into contact with a motor mount. The cable had welded itself to the motor mount.

Undercarriage Inspection:

Examination of the undercarriage revealed fire damage to the front-end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The vehicle was on a GM frame and the GM fuel system was observed intact. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact.

Fuse Panel Inspection:

The fuse block had significant fire damage. The plastic was melted and some conductors were fractured. The amount of mass that was intact indicated that the fire did not originate at the fuse block.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated in the engine compartment on the driver's side.

Potential Contributing Factors:

During our examination, we did not identify any remains of P-clamps to restrict the movement of the positive battery cable. The cable had abraded against the motor mount, compromising the insulation. The cable then arced to the motor mount.

Evidence Collected:

No evidence was collected for laboratory examination.

Interviews:

In an interview with mail carrier stated that he was driving the vehicle when the engine died. He attempted to restart the vehicle which it did briefly but died again. He observed smoke coming from the vents in the engine hood. He then saw flames coming from the vent in the hood. He attempted to retrieve the mail and personal belongings from the passenger compartment, but the fire grew too quickly. He had no problems with the vehicle up to the point of the fire.

Service Records:

The LLV had the positive battery cable replaced during a preventative maintenance inspection. The work order, number 21225102 indicated the scheduled maintenance occurred between February 27, 2018 and March 16, 2018.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Mager

David A. Mager, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

May 25, 2018
RCG File No. 50905578

Photograph 1

1987 LLV 7200197, VIN 1GBBS10E9H2300189.



Photograph 2

Overall view of interior.



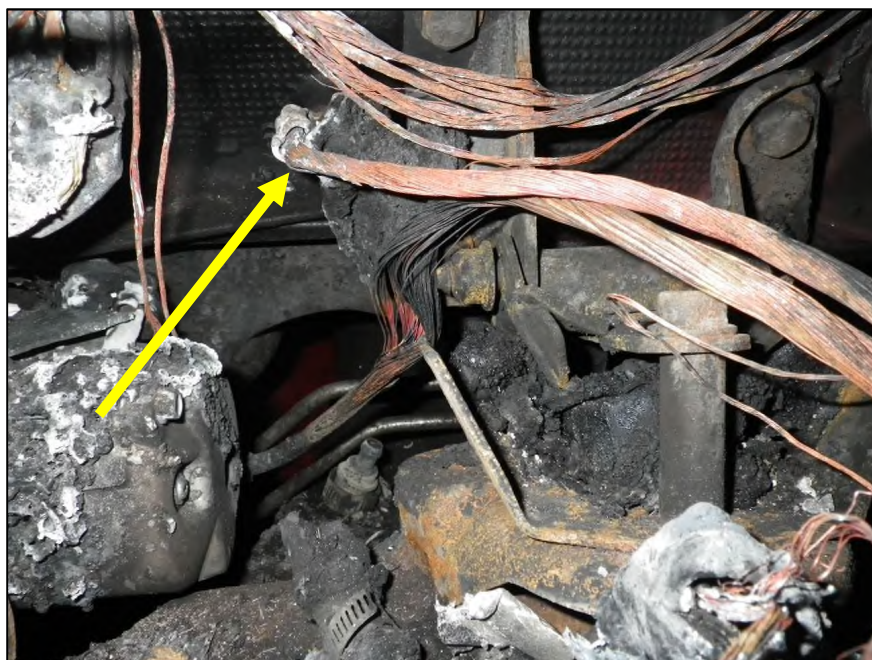
Photograph 3

Overall view of engine compartment.



Photograph 4

Positive battery cable arced to motor mount.



May 25, 2018
RCG File No. 50905578

CVs



DAVID A. MAGER, CFI FIRE CONSULTANT

Mr. Mager is an International Association of Arson Investigators Certified Fire Investigator, Illinois State Fire Marshall Office Certified Fire Investigator, Certified Fire Officer II, Hazardous Materials Technician "B" and a Illinois Department of Public Health Certified Paramedic.

Mr. Mager has an extensive professional background in the areas of firefighting and fire investigations, and has investigated over five hundred fires. His professional experience includes fire and explosion investigations, fire protection and detection system inspections as well as hazardous materials mitigations.

As an International Association of Arson Investigators Certified Instructor and a Certified Instructor II through the Illinois State Fire Marshall Office, Mr. Mager has conducted numerous live fire training exercises for Fire Fighters and Fire Investigators using authentic room furnishings as well as classes on fire behavior and evidence preservation.

Mr. Mager is a Retired Deputy Fire Chief and had been the Training Officer with the Midlothian, IL. Fire Department. He was an Assistant Team Leader for the Southwest Hazardous Materials Response Team and routinely responded to fire and hazardous materials incidents, fire investigations and conducted life safety inspections within the municipality.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator - Illinois State Fire Marshall Office
Certified Fire Investigator - International Association of Arson Investigators
Certified Instructor – International Association of Arson Investigators
Certified Fire Officer II – Illinois State Fire Marshall Office
Certified Hazardous Materials Technician "B" - Illinois State Fire Marshall Office
Certified Fire Department Incident Safety Officer – Illinois State Fire Marshall Office
International Association of Arson Investigators – Member
International Association of Arson Investigators (Illinois Chapter) – Member

EMPLOYMENT HISTORY

2008 – Present	Rimkus Consulting Group, Inc.
1987 – 2015	Midlothian Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2677 North Main Street., Suite 300
Santa Ana, CA 92705
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

August 29, 2016

Re: RCG File No: 71804983
LLV Number: 7200654
VMF Location: 7001 S. Central Avenue in Los Angeles, California
Subject: Final Report

On July 1, 2016, a fire occurred involving USPS LLV 7200654. The loss location was reported as 4625 E. Rosecrans Avenue in Compton, California. LLV 7200654 was examined at the VMF located at 7001 S. Central Avenue in Los Angeles, California.

Rimkus Consulting Group, Inc. was retained to determine the origin and cause of the fire. In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on July 12, 2016. During our investigation, we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver, and documented the vehicle with photographs. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be in the center of the engine compartment in the area of the air filter.

3. The specific ignition sequence and cause of the fire was a direct result of a back fire that occurred during multiple attempts to start the LLV.

Observations

Exterior Inspection:

The engine compartment sustained severe fire damage at the rear area adjacent to the bulkhead, with damage sharply diminishing to the front, where the grill and front of the engine remained intact. The structural area of the LLV to the right and left of the engine compartment had been consumed by fire, with slightly greater damage to the left side, immediately to the rear and slightly above the wheel wells. The grill and front bumper remained intact.

Fire severely damaged the driver compartment by consuming all combustible contents and melting and warping metal and glass components. The roof was destroyed rearward to the cargo juncture.

The cargo area sustained heat and smoke damage. The adjoining driver compartment sustained smoke damage and diminished towards the rear. Other than heat effects to the front adjoining cargo compartment enclosure wall and door, there was no significant exterior fire damage to the rear of the driver compartment.

All window glass had been broken and due to fire and heat was not in place. The operator door cylinder lock was consumed by fire. The left side door cylinder lock remained in place.

All of the tires remained intact and inflated.

Interior Inspection:

The interior operator compartment was severely damaged by fire and all combustible components were consumed or charred. Electrical conductors, wiring harnesses, and electrical components indicated exposure damage from fire originating near the center of the vehicle bulkhead area.

No physical evidence of adverse electrical activity was observed. Nearly all combustible wire insulation and related combustible components had been consumed by fire. Fire damage in the operator compartment was consistent with a fire originating near the bulkhead location and spreading forward in the engine compartment and rearward into the driver compartment.

The bulkhead was severely damaged near floor level at the center, with damage diminishing slightly to the right and left sides. Partially unburned flooring was noted immediately below and to the rear of the bulkhead in the operator compartment.

The cargo area interior remained intact but sustained heat and smoke damage to the roof, open rear cargo door, and at the front, common to the driver compartment. Heat entered at the doorway leaving distinct heat patterns at the doorway and front wall. Damage diminished significantly to the rear where primarily smoke damage occurred.

Engine Compartment Inspection:

The engine compartment was severely damaged adjacent to the bulkhead by fire and combustible contents were consumed or severely charred at the rear section of the engine compartment. Fire damage diminished to the front of the engine compartment, where combustible components, such as the serpentine belt, remained intact.

All fire patterns within the engine compartment indicated fire originated near center at the bulkhead location. All significant fire damage was observed at a high level within the engine compartment.

Engine oil, transmission fluid, and engine coolant levels were found to be within normal operating limits.

Undercarriage Inspection:

There was no indication of impact damage to the frame or undercarriage components. The undercarriage sustained no fire damage other than minor fall-down of burning plastic components located at the rear of the engine compartment. The fuel tank was intact and unburned. The gas cap and filler tube were also intact. Fuel lines were intact at the tank and where traversing forward in the left-side open frame rail. The transmission case was intact. The engine oil pan was intact and unburned. The LLV was mounted on a GM frame. The LLV had a GM fuel filter system.

Fuse Panel Inspection:

The fuse panel was contained inside the driver compartment, right side at the bulkhead location in front of the driver's seat. The fuse panel was severely damaged and consumed by fire and a determination as to the state of the fuses could not be conclusively determined.

Area of Fire Origin:

The fire originated high in the engine compartment, near center in the vehicle at the bulkhead location where the air filter was located.

Contributing Factors:

Examination of the vehicle and circumstances indicated the most probable source for the fire was a back-fire ignition of the air filter element when the carrier was attempting to start the LLV while “choking” the engine and “giving it gas.” The air filter likely contained gasoline vapors from repeated attempts to start the engine from unburned fuel collecting on the filter via the exhaust system recirculation tube connection to the air filter housing.

The LLV engine exhibited symptoms of incorrect engine ignition timing which caused hard starting and stalling on the day of the fire.

Evidence Collected:

No evidence was collected.

Interview:

USPS carrier, provided the following information:

- He has been working with USPS for approximately one and a half years as a carrier.
- He drives five routes per week total, and he drives the subject route and LLV only once each week.
- The day of the fire, he started the route at about 9:30 A.M.
- The fire occurred at about 11:00 A.M.
- The LLV was acting “odd” that day.
- The LLV was hard to start, and every time he made a stop, by the time he was able to curb his wheels, the engine would die.
- To re-start the engine, he needed to “choke it” every time to get it going.
- The last time he tried to start the LLV, the starter would turn over the engine, but it would only sputter but not start even though he was “choking” it and giving it gas.
- He tried for about a minute to start the LLV and then noticed light colored smoke come up from the hood, near the driver window, then a little bit of smoke came into the cab.

- He then called his supervisor and said the LLV was smoking and would not start. His Supervisor was going to have another LLV come out to get the mail but it would take about a half hour to get there.
- He decided to make use of that time to make deliveries on-foot, so he took the key out of the LLV and proceeded to walk mail to two streets.
- When he came around the corner on the way back from making deliveries, he saw that the LLV was on fire, at which time he called 911 to report the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

Service Records:

A review of the service records for the involved LLV indicated that the vehicle had reportedly had starting issues and the fuel pump had been replaced on June 24, 2016. There were no other entries that would have contributed to the cause of the fire.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 29, 2016
RCG File No. 71804983

Photograph 1
LLV 7200654.



Photograph 2
Hood indicates fire/heat at rear of engine compartment.



August 29, 2016
RCG File No. 71804983

Photograph 3

Hood melted above engine air filter.



Photograph 4

Origin area high at rear of engine compartment, Yellow circle.



August 29, 2016
RCG File No. 71804983

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, New Jersey 07631
(201) 368-8551 Telephone
(201) 368-8557 Facsimile

Certificate of Authorization No. 24GA28127700

March 26, 2019

Re: RCG File No: 47810969
LLV Number: 7200959
VMF Location: 50 Brewery Street New Haven, Connecticut
Subject: Preliminary/Final Report

Dear

On February 28, 2019, a fire occurred involving USPS LLV 7200959. The loss location was reported to be 276 Washington Street in New Haven, Connecticut. LLV 7200959 was examined at the VMF located at 50 Brewery Street in New Haven, Connecticut.

Rimkus Consulting Group, Inc. was retained to examine LLV 7200959, VIN 1GBBS10E2H2300969 to determine the cause of the fire. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver Mr. Danny Walelo, and documented the vehicle with photographs. The vehicle examination was conducted by Fire Consultant Jeffrey Wilson, IAAI-CFI, on March 5, 2019. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using the systematic approach as recommended in the current edition of the National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the driver side of the engine along the side of the engine block.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination. The possibility of a brake fluid leak due to mechanical damage may have contributed to the damage.

Observations

Exterior Inspection:

The vehicle sustained severe fire damage to the front half of the vehicle. The windshield was completely destroyed. All four of the tires were observed to be undamaged.

Interior Inspection:

The cargo area sustained smoke damage throughout. The driver's compartment sustained fire and heat damage throughout. The combustible material of the driver's seat had been consumed. The top portion of the mail rack along the left side had been consumed. The steering column had collapsed. The front bulkhead had been consumed. The entire dashboard, wiring and wiring harness were completely consumed and could not be examined.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. The vehicle was equipped with a GM 2.5L, four-cylinder gasoline engine. The engine compartment sustained severe fire, heat and smoke damage throughout. The power steering unit sustained fire damage. The reservoir had been consumed. The upper portion of the flexible return line and reservoir had been consumed. The upper radiator hose on the left side of the engine compartment had been consumed.

The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been consumed. The alternator sustained severe fire and heat damage.

The top and side nearest to the engine of the battery case had been consumed. The conductors had become detached from the side terminals. The insulation had been consumed but displayed no evidence of adverse electrical activity. The radiator was intact but the attached hoses had been fully consumed. The air filter had also been consumed.

The brake lines positioned on the left side of the engine sustained severe fire and heat damage. The tubing had also been fully consumed. The lower portion of the brake line displayed severe damage.

Undercarriage Inspection:

Examination of the rear undercarriage revealed no evidence of soot, smoke, heat or fire damage. The involved LLV was mounted on a GM frame. There was no damage to the undercarriage of the vehicle beneath the cargo area. The exhaust system was undamaged. The rear tire, wheels, brake lines and brakes were undamaged by the fire. The fuel tank was undamaged by the fire. The fuel lines were intact along the left open portion of the box frame routed to the front of the vehicle.

The undercarriage and frame in the area of the engine sustained fire and heat damage at the left side of the engine. The fuel lines were intact inside of the box type frame in the engine compartment. The rubber flex section routed to the charcoal canister had been consumed. The high pressure connection to the fuel rail positioned on the right side of the engine was secure as was the return line.

Fuse Panel Inspection:

We were unable to examine the fuse panel as it had sustained severe fire damage and mass loss to the panel and all of the fuses. As a result of the fire damage and mass loss, we were not able to determine if any fuses were open or blown.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, the fire originated within the engine compartment of the vehicle. The area of origin was determined to be on the driver side of the engine compartment. A more specific area of origin could not be determined due to the severe

damage and lack of remaining physical evidence. The specific point of origin could not be conclusively identified due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

Potential Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination. The possibility of a brake fluid leak due to mechanical damage may have contributed to the damage.

Evidence Collected:

There was no physical evidence collected for laboratory analysis

Service Records:

A review of the provided service records for the involved LLV was conducted. Over the past year and a half, the LLV had only received routine service (head lamp, rear door repair) and the normal scheduled preventative maintenance.

Interview:

The driver/operator of the involved LLV, was interviewed on March 5, 2019, and provided the following information:

- He had loaded up his truck with mail as usual and left the mail center.
- He drove to his first stop, which was at the Mobil gas station. He parked the truck next to the gas pumps and was exiting the vehicle.
- When doing so, he noticed smoke coming from under the engine hood and the driver side wheel well.
- He ran inside to notify the service station attendant.
- Both he and the attendant ran back outside with fire extinguishers, but by that time they got to the vehicle, there was a large amount of flames visible.
- The attendant attempted to extinguish the fire to no avail and Mr. called 911. The fire department then arrived within about 5 minutes and extinguished the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jeffrey Wilson

Jeffrey Wilson, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

March 26, 2019
RCG File No. 47810969

Photograph 1

A view of the exterior front of the vehicle.



Photograph 2

Driver side front of vehicle.



March 26, 2019
RCG File No. 47810969

Photograph 3

A view of the engine compartment.



Photograph 4

Remains of the brake vacuum pump.



March 26, 2019
RCG File No. 47810969

Photograph 5

Remains of the air filter canister.



Photograph 6

Area under remains of the air filter.



March 26, 2019
RCG File No. 47810969

Photograph 7
Remains of the battery.



Photograph 8
Remains of the engine compartment.



March 26, 2019
RCG File No. 47810969

Curriculum Vitae



JEFFREY WILSON, CFEI FIRE CONSULTANT

Mr. Wilson is a Certified Fire & Explosion Investigator (NAFI-CFEI) with the National Association of Fire Investigators, a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard) and a New York State Fire Investigator. Mr. Wilson is a Licensed Private Investigator in the states of New York, New Jersey and Connecticut. He has investigated and determined the origin and cause of several hundred fires to include commercial structures, residential structures, vehicles and wild land. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Wilson has testified on several occasions involving the investigation of fires in New York.

Mr. Wilson entered the field of fire service in 1984 and received a Bachelor of Science in Fire Science in 1988. His professional career includes twenty years of experience as a New Rochelle Police Officer. He obtained the rank of Detective in 1995 and was later assigned to major case investigations in 2005 which included among other investigations, Arson. He obtained certification as a New York State Fire Investigator in 2005 and was then appointed to the Westchester County Cause and Origin team at that time, which he continues to serve on today. In addition to his law enforcement career, Mr. Wilson has over thirty years as a volunteer firefighter and obtained the rank of Fire Captain.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Columbia Southern University, Orange Beach, AL, 2009, 22 Master Degree credits
Mercy College, Dobbs Ferry, New York, Bachelor of Science Degree in Fire Science, 1988

Certifications:

Fire Service Professional Qualification (ProBoard) - Certified Fire Investigator # NY755050-1117-0069
National Association of Fire Investigators (NAFI) Certified Fire and Explosion Investigator (CFEI)
New York State Fire Investigator - Level 1, 2005
New York State Fire Investigator - Level 2, 2005
New York State Emergency Technician #129714, 1988

Licenses:

State of New York - Licensed Private Investigator #11000154190
State of Connecticut - Licensed Private Investigator # FA-2508
State of New Jersey – Licensed Private Investigator # 8253

Training:

IAAI-CFIT TRAINER	50 Hours
Electrical Cause Investigation I-	2009
Electrical Cause Investigation II-	2009
Fire Scene Evidence Collection-	2009
Fire Behavior & Arson Awareness-	2005
Principle of Fire Investigations-	2005
Cause & Origin Determination-	1987



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
560 Southwest 12th Avenue
Deerfield Beach, FL 33442
(954) 428-1422 Telephone
(954) 428-1849 Facsimile
Certificate of Authorization No. 8301

March 3, 2016

Re: RCG File No: 41418524
LLV Number: 7201309
VMF Location: 585 Avenida F.D. Roosevelt in San Juan, Puerto Rico
Subject: Final Report

Rimkus Consulting Group, Inc. was requested to examine the vehicle fire loss involving USPS LLV 7201309 that occurred at 369 Avesan Claudio in San Juan, Puerto Rico on December 30, 2015. In the course of the work, we examined and documented the fire-damaged vehicle on January 12, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 585 Avenida F.D. Roosevelt in San Juan, Puerto Rico. The work to complete this assignment was performed by Fire Consultant, Alexander F. Kapczynski, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the right side of the engine compartment where the large positive conductor had been routed.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of the large positive battery cable becoming pinched between the motor mount and the frame causing mechanical damage and adverse electrical activity.

Observations

Exterior Inspection:

The exterior examination of the vehicle revealed no evidence of soot, smoke, heat or fire damage.

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments revealed no evidence of soot, smoke, heat or fire damage.

Engine Compartment Inspection:

The engine compartment sustained minor damage and the fire appeared to have been extinguished quickly. Fluid levels were observed to be within normal limits. The fuel filter was positioned in the engine compartment on the left side of the engine and towards the firewall. The OEM part number for the fuel filter was 25171792. The fuel filter was intact and free of fire damage. The fuel lines ran along the left side of the vehicle and entered the engine compartment from the rear of the engine. The fuel lines and filter system were not involved in the ignition of the fire.

Evidence of adverse electrical activity was observed on grounding conductors on the right and left sides of the engine. A small conductor connected to the negative terminal of the battery sustained heat damage. The plastic insulation of the small negative conductor was burned off and the conductor was severed. On the left side of the engine, a grounding strap was observed to be severed and burned at a connection point to the frame.

Examination of the large positive conductor revealed that the conductor was pinched between the engine motor mount and the frame. At the juncture where the large positive conductor was pinched, the plastic insulation of the large positive conductor was degraded and the conductor was observed in contact with the metal frame.

Undercarriage Inspection:

Burn pattern analysis and an examination of the remaining physical evidence found during the undercarriage inspection revealed that the fire originated in the emergency brake system as a result of adverse electrical activity in the engine compartment. The

plastic coverings of the emergency brake cable attached to both rear wheels were melted. Residue from a dry chemical extinguisher was observed on the emergency brake cables and rear axle. The involved LLV was mounted on a General Motors (GM) frame.

Fuse Panel Inspection:

Examination of the fuse panel located within the operator's compartment revealed no evidence of soot, smoke, heat or fire damage. The fuse panel did not have a cover. The fuses were examined and no blown fuses were observed.

Area of Fire Origin:

The area of fire origin was determined to be on the right side of the engine compartment where the large positive conductor was pinched between the motor mount and the frame of the vehicle. Engine vibration and friction were likely the cause of eroding the plastic insulation of the positive conductor. When the positive conductor came in contact with the metal grounded frame, adverse electrical activity occurred on the grounding conductors and the emergency brake cables.

Contributing Factors:

The fire occurred on December 30, 2015. On November 17, 2015 the battery was replaced and on October 19, 2015, the battery cables were replaced by an independent contractor. Maintenance records indicated that the battery and battery cables were replaced by Fast Road Assistant, P.O. Box 4521, Carolina, Puerto Rico.

Evidence Collected:

During the vehicle inspection, several items of evidence were collected from the fire damaged vehicle. The items of evidence were then transferred to our Charlotte, North Carolina office for further inspection and analysis. The following items were collected during our January 12, 2016 vehicle inspection:

- Exhibit "A"- Remnants of a grounding strap and broken connector found on the left side of the engine.
- Exhibit "B"- Remnants of a grounding conductor found attached to the vehicle frame on the right side of the engine.
- Exhibit "C"- Main battery cable with both positive and negative conductors. The positive conductor displays damage where it was pinched between the motor mount and the frame. The small ground conductor was severed and displayed

melting of the plastic insulation the length of the conductor and also damage to the negative terminal connection.

The collected evidence was examined in the lab and confirmed the cause of the fire.

Interviews:

Multiple attempts to interview the mail carrier who witnessed the fire were unsuccessful. As of the date of this final report, an interview with carrier remains unsuccessful.

Service Records:

A review of the service records did not indicate any current work that would have contributed to the cause of the fire. The mileage on the vehicle was 2,433, which could indicate that the engine was changed out recently and the battery cable could have been compromised at this time.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Alexander F. Kapczynski

Alexander F. Kapczynski, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 3, 2016
RCG File No. 41418524

Photograph 1
Front view of LLV 7201309.



Photograph 2
Undercarriage examination was conducted and fire damaged emergency brake cables were found.



March 3, 2016
RCG File No. 41418524

Photograph 3

Melted plastic sheathing of the emergency brake cable was observed during the undercarriage examination.



Photograph 4

View of fire damage to emergency brake cable attached to the right rear wheel.



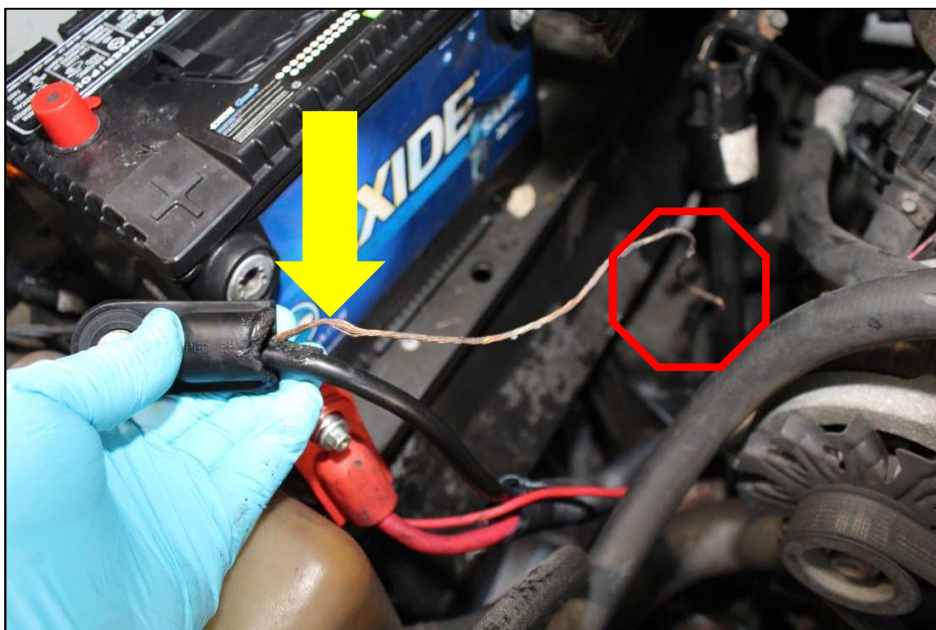
Photograph 5

Grounding strap on left side of the engine compartment was found severed from the connector attached to the vehicle frame.



Photograph 6

Adverse electrical activity was observed on the small negative conductor attached to the negative battery terminal.



March 3, 2016
RCG File No. 41418524

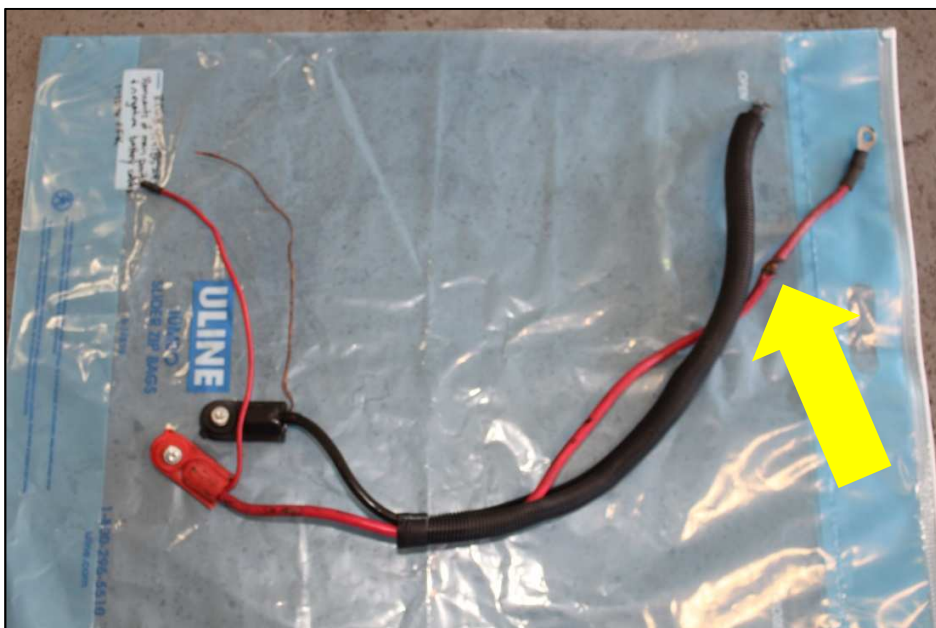
Photograph 7

The large positive conductor was found pinched between the motor mount and the vehicle frame.



Photograph 8

Main battery cables removed and collected. Arrow indicates damaged area.



March 3, 2016
RCG File No. 41418524

Photograph 9

Close-up view of the damaged positive battery cable.



Photograph 10

The fuel filter was mounted in the rear of the engine compartment and displayed no fire damage.



March 3, 2016
RCG File No. 41418524

CVs



**ALEXANDER F. KAPCZYNSKI, IAAI-CFI
FIRE CONSULTANT**

Mr. Kapczynski is a Certified Fire Investigator with the International Association of Arson Investigators (IAAI-CFI), the National Board of Fire Service Professional Qualifications and a New York State Certified Level II Fire Investigator with the New York State Office of Fire Prevention and Control. Mr. Kapczynski is a licensed private investigator in the State of Florida. He served in the City of Albany Fire Department for over twenty one years and was a Lieutenant in the City of Albany's Fire Investigation Unit (FIU) for approximately four years. As a member of the FIU, Mr. Kapczynski investigated and determined the origin and cause involving commercial structures, residential structures and vehicles. Mr. Kapczynski has testified on multiple occasions in criminal proceedings pursuant to his duties as a fire investigator.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

City of Albany Fire Department, Albany, New York
Firefighter Essentials, 1992

Hudson Valley Community College, Troy, New York
Emergency Medical Technician Paramedic Level, 1996

Corning Community College, Corning, New York
Associates Degree, Fire Protection Technology, 1997

New York State Fire Academy, Montour Falls, New York
Hazardous Materials Specialist Training, 1998

New York State Fire Academy, Montour Falls, New York
Fire Behavior & Principles of Fire Investigation, 2007

New York State Fire Academy, Montour Falls, New York
Fire Arson Investigation, 2007

International Association of Arson Investigators, Rutland, Vermont
Advanced Fire Investigation Techniques Seminar, 2008

New York State Fire Academy, Montour Falls, New York
Electrical Cause Determination I & II, 2009

International Association of Arson Investigators, Charlotte, North Carolina
Expert Report Writing, 2010

New York State Fire Investigators & ATF, Colonie, New York
Arc Mapping Seminar, 2010



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
8100 S. Akron St., Ste 320
Centennial, CO 80112
(720) 488-8710 Telephone
(720) 488-8670 Facsimile

June 28, 2017

Re: RCG File No:

LLV Number: 01607704
VMF Location: 7202082
Subject: 5001 N. Spruce Street in Denver, Colorado
Preliminary/Final Report

Dear

On June 2, 2017, a fire occurred involving a US Postal Service vehicle in operation at 14051 Colorado Boulevard near Thornton, Colorado.

On June 6, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1987 Chevrolet postal delivery vehicle LLV 7202082, VIN 1GBBS10E2H2302107. On June 12, 2017, we conducted a fire origin and cause examination on the vehicle at 5001 N. Spruce Street in Denver, Colorado.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records, and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Joseph R. Filas, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be on the left side of the engine towards the rear and down at the bottom of the engine.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of ignition of either leaking or atomized engine fluid coming in contact with the hot surface area of the components in the area of the exhaust manifold.

Observations

Exterior Inspection:

For the purpose of this report, the left side of the vehicle refers to the mail side and the right side refers to the operator's side. There was no damage to the exterior sides, top, or to the rear of the LLV. The engine hood components were damaged from the fire at the rear area near the windshield. The windows and windshield were intact and undamaged with some minor smoke staining to the windshield. The front of the LLV was examined. The hood was damaged from heat and flames to the top half of the hood and the LLV body above the hood. This damage was centered over the left rear of the hood.

The wheels and tires were intact. There was no evidence to indicate that the LLV had recently been involved in a collision. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

The interior of the LLV was examined. The rear compartment of the interior was observed with no damage. The front compartment was observed with no fire damage and with minor smoke damage only to the dashboard area. There was no physical evidence observed on the interior of the LLV that would have caused or contributed to the cause of the fire.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine. Both sides of the engine were damaged by the fire. The right side still had rubber hoses unburned from the fire and intact. Damage to the engine compartment became more severe from the right side towards the left rear of the engine. This damage at the left rear of the engine was more extreme towards the bottom of the engine. The underside of the hood above the left rear side of the engine was damaged from heat and flame. Paint on the underside of the hood and centered

over the left rear of the engine had been consumed by the fire in the area of the left rear of the engine were metal fuel lines. The engine oil dip stick indicated the crankcase was full of oil. The transmission dipstick indicated no fluid remained within the transmission. There was indication of fluid leaks on the underside of the engine compartment and on the components within the underside of the engine compartment. The fuel system was the GM model.

The battery for the vehicle was located at the front right side of the engine compartment and had minor external heat damage. The battery, the battery terminals and battery cables were examined and found to be intact with thermal damage only, no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The carburetor was examined and observed with minor fire damage to the top portion of the carburetor where the air filter housing was mounted.

Based on the fire patterns observed, the left side of the engine within the engine compartment was determined to be the area of origin.

Undercarriage Inspection:

The undercarriage of the LLV was examined. The exhaust pipe extended from the exhaust manifold down to the bottom of the engine and then transitioned to the right side of the engine just in front of the oil pan. The exhaust pipe was damaged from direct flame impingement along this transition. The paint on the front of the oil pan which was parallel to the exhaust pipe was burned off. At the bottom of the exhaust pipe where the transition begins, a circular pattern that is consistent with a liquid puddling and then dripping from the exhaust pipe was observed.

Fuse Panel Inspection:

An examination of the electrical fuse panel was conducted. There was no heat or flame damage to the fuse panel. The electrical conductors to and from the fuse panel were all intact with the insulation still intact. Smoke staining was observed to the fuse panel located at the driver's side dashboard. There was one blown 1-ampere fuse labeled as ECMB. All other fuses were intact.

Area of Fire Origin:

The area of origin was determined to be at the mail side rear portion of the engine compartment near the undercarriage.

Service Records:

A review of the service records provided for the involved LLV was completed. The last preventative maintenance was reported to be April, 2017. On May 19, 2017 the power steering hoses were replaced within the engine compartment. On April 7, 2017 the oil filter was changed and new valve cover gaskets were installed. After a review of the service records, it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Contributing Factors:

Based on the remaining physical evidence, the most probable cause of this fire was from either leaking or atomized engine fluid coming in contact with the hot surface area of the components in the area of the exhaust manifold. The rubber fuel lines that had been consumed by the fire were over the area of origin. The most severe damage to the LLV was at the left rear, bottom of the engine. The exhaust pipe extending from the exhaust manifold to the catalytic converter was located in this area. The LLV was being operated at the time of the fire. The burn pattern observed on the exhaust pipe and oil pan were consistent with liquid pooling on the bottom of the exhaust pipe area.

Potential contributing factors is a fluid leak in the area of the engine compartment including transmission fluid, engine oil, and power steering fluid. Pressure testing of the fuel system indicated no leaks of the fuel system at the time of our inspection.

Evidence Collected:

No physical evidence was collected from the vehicle.

Interview:

The driver was interviewed over the phone. She stated that she had been driving the vehicle on her route; she is not the normal driver of the vehicle but smelled an odor similar to brakes. She did not notice anything out of the ordinary with the operation of the vehicle. She stated the vehicle had been operating normally and had no previously problems the day of the fire. She stated she saw smoke coming from underneath the vehicle and stopped in a local fire station for assistance.

She stated when she exited the vehicle, she could see fluid developing under the vehicle near the engine compartment and saw fire in the area. She did not attempt to open the hood. The fire department extinguished the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Joseph R. Filas

Joseph R. Filas, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

June 28, 2017
RCG File No. 01607704

Photograph 1

The front exterior of the vehicle.



Photograph 2

The mail side exterior of the vehicle.



June 28, 2017
RCG File No. 01607704

Photograph 3

The rear exterior of the vehicle.



Photograph 4

The driver side exterior of the vehicle.



June 28, 2017
RCG File No. 01607704

Photograph 5

The driver's side of the driver's compartment.



Photograph 6

The cargo area.



June 28, 2017
RCG File No. 01607704

Photograph 7

The engine compartment.



Photograph 8

The undercarriage, as seen while facing the front of the vehicle.



June 28, 2017
RCG File No. 01607704

Photograph 9
The fuse panel.



Photograph 10
The left rear side of the engine compartment; observe the fore damage progressing up from the lower portion of the engine.



June 28, 2017
RCG File No. 01607704

CVs



**JOSEPH R. FILAS, B.S., C.F.I., C.F.E.I., C.F.I.
FIRE CONSULTANT**

Mr. Filas is a graduate from Eastern Kentucky University with a Bachelor of Science in Fire and Safety Technology, with an emphasis in Fire, Arson, and Explosion Investigation. He is a Certified Fire and Explosion Investigator (C.F.E.I.) through N.A.F.I., a Certified Fire Investigator (C.F.I.) through I.A.A.I., and a Certified Fireplace Inspector through F.I.R.E. He has completed numerous educational seminars and continuing education courses. In addition to his educational achievements, he has experience in origin and cause investigations, researching fire code violations, and assisting with failure analysis of appliances. He has conducted fire and explosion investigations that include commercial, residential, and automotive. He has testified at depositions and trial, pertaining to his findings.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S., Fire and Safety Technology, Emphasis - Fire, Arson, and Explosion Investigation
Eastern Kentucky University - December 1999
Certified Fireplace Inspector (C.F.I.) - Fireplace, Investigation, Research, and Education Service,
November 2008 - Certificate Number: FP-194
Certified Fire Investigator (C.F.I.) - International Association of Arson Investigators
October 2006 - Certificate Number: 08-090
Certified Fire & Explosion Investigator (C.F.E.I.) - National Association of Fire Investigators
April 1999 - Certification Number: 6651-2287
Fire Investigator – IAAI-CFI - National Board on Fire Service Professional Qualifications
October 2007 - Certificate Number: 302566
International Association of Arson Investigators – I.A.A.I. – Member
International Association of Arson Investigators – I.A.A.I. – Colorado Chapter - Member
National Association of Fire Investigators – N.A.F.I. – Member
Licensed Private Detective - Arizona
Licensed Private Investigator – Montana, Nevada, Washington

CONTINUING EDUCATION

- Prevention and Investigation of Commercial Kitchen Fires, International Code Council, Phil Ackland & Associates – March 2016
- 65th IAAI International Training Conference, IAAI, April 2014
- Fundamentals of Residential Building Construction, CFITrainer.net, October 2011
- Documenting the Event, CFITrainer.net, October 2011
- Investigating Solid Fuel-Burning Appliance Fires, Fire-Findings, October 2011
- Fundamentals of Interviewing, CFITrainer.net, August 2011
- Deposition and Trial Testimony Training, Rimkus Consulting Group, Inc., February 2010
- Fireplace Inspection, FP-01/FP-02/FP-03, Fireplace Investigation, Research, & Education Service, November 2008
- Investigation of Gas and Electrical Appliance Fires, Fire-Findings, November 2006
- CFI, Testimony Course, IAAI - Texas Chapter, January 2006
- 41st Southeastern Arson Seminar, Georgia Fire Investigators Association – IAAI, August 2005



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
7851 Woodland Center Boulevard
Tampa, Florida 33614
Telephone: (800) 498-3060

August 16, 2019

Re: RCG File No: 100009142
LLV Number: 7203064
VMF Location: 1661 Ringling Boulevard Sarasota, Florida
Subject: Preliminary/Final Report

Dear

On July 19, 2019, a fire involving US Postal Service LLV 7203064 occurred. The LLV was a 1987 model and the Vehicle Identification Number (VIN) was 1GBCS1045R2915397 with a 2.2 liter gasoline engine. At the time of the fire, the vehicle was operating and delivering mail. On July 26th, 2019, Rimkus Consulting Group, Inc. was retained to determine the origin and cause of the fire.

Our inspection of the vehicle occurred on July 26th, 2019, at the USPS Vehicle Maintenance Facility (VMF) located at 1661 Ringling Boulevard in Sarasota, Florida. In the course of our work we inspected and photographed the vehicle, reviewed maintenance and repair records, reviewed data and completed interviews. The work to complete this assignment was performed by Mr. Christian P. Frezza, IAAI-CFI and Mr. Thomas W. Young, IAAI-CFI (V), VP Fire Division. A technical review of this file was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated within the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be on the rear of the engine.
3. The specific ignition sequence and cause of the fire was consistent with ignition of either leaking or atomized fuel encountering a hot surface area of components or other competent ignition source.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a counterclockwise direction. For the purposes of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Fire damage was observed in the engine compartment. It was observed that the majority of the engine hood was melted and burn through occurred. The windshield was severely damaged with heat and thermal damage causing it to fail. The interior dashboard was severely damaged by heat and thermal damage. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all the LLV tires were found to be of the same make, size and manufacturer. There was no evidence to indicate that the brakes, wheel assemblies, or axles had failed. The fuel cap was in place and secured.

Interior Inspection:

An interior examination of the LLV revealed extensive heat and thermal damage within the cab and engine compartment. Fire patterns and the analysis of fire dynamics revealed that the fire communicated upward and outward from the rear of the engine compartment resulting with severe damage to the interior front portion of the passenger compartment.

Engine Compartment Inspection:

The engine compartment was examined. The 2.2-litre engine was equipped with a standard ignition coil. Severe fire damage was observed along the bulkhead of the engine compartment including the right and mails side of the engine and related components. The most distinct area of fire damage was observed along the rear of the engine in proximity to the fuel line test port. Fire patterns communicated upward and outward. The damage included breaching the composite hood material at the approximate left mail side, center and rear portions.

At the time of the fire, there was a 12-volt battery mounted along the right front corner of the engine compartment. The battery displayed severe fire damage. Thermal damage was observed to the battery connectors. No physical evidence of electrical activity could be observed to the battery conductors.

The alternator was located along the right front portion of the engine. No physical evidence of electrical activity was observed to the alternator.

The fuel lines were routed from the left rear portion of the engine compartment and downward toward the undercarriage. The rigid portions of the fuel lines were intact with no outward indication of damages.

Undercarriage Inspection:

The undercarriage of the LLV was inspected. No indications of a fire originating or sustained damages were observed. The involved LLV was mounted to a Chevrolet S-10 frame. The fuel filter was located along the frame rail portion of the LLV and in proximity to the mail side frame rail. There were no indications of damage to the fuel delivery system pertaining to the undercarriage inspection.

Fuse Panel Inspection:

The fuse panel was located along the right side of the dash and in proximity to the steering column and control pedals. There was severe fire damage observed to the fuse panel.

Area of Fire Origin:

Based on the observed pattern of fire damage and the systematic evaluation of the remaining physical evidence, it was determined that the fire originated along the rear portion of the engine, and in proximity to the fuel line test port.

Potential Contributing Factors:

A fuel leak associated with the fuel line test port in the general area of the fuel line, located on the rear portion of the engine. Upon examination, the fuel line test port was loose. A contributing factor would be a fluid leak and its associated vapors in the presence of a suitable ignition source. The exact cause and ignition sequence is inconclusive, however, fuel leaking onto a hot surface or an ignition source cannot be ruled out.

Evidence Collected:

A portion of the fuel line with test port, headlight switch, fuse box, carburetor and electrical components were collected. X-Rays taken of the components reveal no culpable causation.

Interviews:

At the time of the fire, the LLV was being operated by Postal carrier. She reported that she had no notable operational deficiencies during the day of the incident. Overall the vehicle was operating fine on the date of the incident.

On this date, she had been delivering mail on 135th Street Northeast and smelled smoke. She thought it was a guy that has a burn pit and was burning that day. She made the turn onto 134th Street Northeast and still smelled smoke. She got to 1075 134th Street Northeast when the burning smell got worse. She checked the temperature gauge and it was reading hot. She turned off the LLV and called the manager. She told her that she saw more smoke and during the conversation flames started showing under the hood. The manager said to call 9-1-1 and would be on her way. She opened the back door to the LLV and attempted to retrieve mail but the fire got worse. By the time the fire department arrived, the LLV was engulfed in flames. She was not able to recover any mail from the LLV.

Service Records:

A review of the service records provided for the involved LLV was completed. It was noted that preventative maintenance was conducted and components were repaired or replaced.

- 9/25/2018 Spark plugs, distributor cap and rotors and ignition wire set.
- 7/23/2018 Thermostat, headlamp switch and misc. electrical repairs.
- 7/11/2019 Fuel injector, temperature sensor and fuel filter.
- 11/20/2019 Oil pressure sensor.

After a review of the service records it was determined that several typical maintenance issues had occurred on the vehicle over the previous years prior to the fire. None of the records provided indicated that within the area the fire originated any recent repairs had occurred.

This report contains a summary of our findings and does not include a full description of the investigative tasks and methodology we took to reach our conclusions. If a full final report of findings is needed, one will be completed at the request of USPS.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Christian P. Frezza

Christian P. Frezza, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

August 16, 2019
Rimkus File No. 100009142

Photograph 1

Front view of the vehicle right side.



Photograph 2

Front view of vehicle mail side.



August 16, 2019
Rimkus File No. 100009142

Photograph 3

Engine view of the fire damage.



Photograph 4

Additional image of engine damage from mail side.



August 16, 2019
Rimkus File No. 100009142

Photograph 5

Front view of vehicle undercarriage.



Photograph 6

Fuel line test port rear of engine.



Photograph 7

Alternate view of the loose fitting fuel line test port.



Photograph 8

X-ray of the of the loose fitting fuel line test port.



August 16, 2019
Rimkus File No. 100009142

Curriculum Vitae



Christian P. Frezza, CFI, CFEI, FIT

Fire Consultant
Fire Division

Background

Mr. Frezza holds an M.S. degree in Fire Science/Fire Arson Investigation and a graduate certificate from the Dr. Henry C. Lee College of Criminal Justice and Forensic Science. He is also a certified Fire Inspector/Investigator in Connecticut and holds a number of other fire and explosion certifications.

His experience and knowledge covers over 30 years in areas of fire and post-blast investigations and forensics, fire suppression, code enforcement, fire prevention, education and emergency medical services. During that time, he has investigated over 300 fires and explosions in commercial, industrial and residential structures, passenger vehicles and fire fatalities. Mr. Frezza has completed educational seminars and continuing education courses in the field of fire investigation, post-blast investigation, fire code enforcement, fire prevention/education and juvenile fire setting.

Mr. Frezza has participated and assisted with numerous continuing educational training programs involving the investigation of fires with the Connecticut State Police Fire Investigation and Explosion Unit, Federal Bureau of Investigation and Bureau of Alcohol, Tobacco, Firearms & Explosives. This includes live fire and post-blast training involving structures and vehicles and assistance with the Connecticut State Police Fire Investigation and Explosion Unit Advanced Fire Investigation School.

Mr. Frezza has been recognized for his achievements and receipt of the following award and acknowledgements: Connecticut Chapter of the International Association of Arson Investigators Outstanding Accomplishment Award for the thorough investigation, dedication and commitment that led to the arrest, conviction and life sentence of the perpetrator of a murder/arson case. Official Citation from the Town of Manchester, Connecticut for

Contact Information

(813) 289-3060

cfrezza@rimkus.com

7851 Woodland Center
Blvd.
Tampa, FL 33614

recognition of an Outstanding Service award presented by the I.A.A.I for a residential murder/arson investigation and conviction.

Professional Engagements

- Fire/Arson/Explosion Investigations
 - Residential Murder/Arson - Connecticut (2014)
 - Residential, commercial, industrial inspections and code enforcement
 - Fire Prevention and Education
 - Youth Fire Setter Intervention & Investigation

Forensic Engagements

- Fire/Arson/Explosion Investigations - Residential and Commercial Structures
 - Ocala, FL (2018), Medical building/lab
 - Tampa, FL (2018), Commercial building/strip
 - Bradenton, FL (2018), Residential fire
 - Sarasota, FL (2018), Large residential fire
 - Cape Coral, FL (2019), Residential fire
 - Boca Grande, FL (2019), Residential fire
- Fire/Arson/Explosion Investigations - Commercial and Passenger Vehicles
 - Ft. Myers, FL (2018), Sport utility vehicle
 - Belleview, FL (2019), Sport utility vehicle
 - Tampa, FL (2019), Class A recreational vehicle investigation
 - Arcadia, FL (2018), Class A recreational vehicle investigation
 - Seffner, FL (2018), Class A recreational vehicle investigation
 - Tampa, FL (2018), Ice cream conversion van fire
 - Jacksonville, FL (2018), Crane truck fire
 - Palatka, FL (2019), Tractor sleeper cab fire
 - Elfers, FL (2018), Excavator fire
 - Ft. Myers, FL (2019), Commercial tractor trailer fire
- Fire/Arson, Explosion Investigations - Appliances/Electrical Devices
 - Palm Coast, FL (2018), Residential HVAC unit fire
 - Cassadaga, FL (2018), Dryer fire
 - Ft. Myers, FL (2018), Residential electrical panel

Professional Experience

- Rimkus Consulting Group, Inc. 2018 - Present
 - Fire Consultant - Fire Division
Conducts fire and explosion origin and cause investigations in commercial, residential and industrial structures and environments. Investigates fire and explosion incidents involving personal and commercial vehicles including recreational, marine and heavy equipment. Investigates fires involving appliances and electrical devices. Preservation, documentation and collection of evidence related to fire and explosion investigations. Conduct interviews, research and application of investigative techniques and principals to complete oral and written reports for all incidents.
- Manchester Fire Rescue EMS, CT 1993 - 2018
 - Fire Lieutenant/Fire Inspector
Investigated over 300 structure fires including commercial, residential, industrial and vehicle. Responsible for the investigation and coordination of fire fatality investigations with local, state and federal agencies including the Connecticut State Police Fire and Explosion Investigation Unit. Coordinated and operated with the Connecticut State Police FEIU to conduct fire scene investigations utilizing accelerant detection canines. Interview and take statements from witnesses. Preserve, document and collect evidence. Work with state and local police department detectives to investigation and prosecute criminal cases involving incendiary fires and explosions. Conduct fire and life safety inspections. Facilitated and managed the Manchester Youth Fire Setter Intervention Program (Fire Hawk).
- Office of Fire Marshal, Vernon, CT 2007 - 2018
 - Deputy Fire Marshal
Responsible for fire investigation, code enforcement, fire prevention and education. Conduct origin and cause investigations in commercial, residential and industrial buildings and environments and motor vehicle fires. Responsible for the investigation and coordination of fire fatality investigations with local, state and federal agencies including the Connecticut State Police Fire and Explosion Investigation Unit. Coordinated and operated with the Connecticut State Police FEIU to conduct fire scene investigations utilizing accelerant detection canines. Interview and take statements from witnesses. Preserve, document and collect evidence. Work with state and local police department detectives to investigation and prosecute criminal cases involving incendiary fires and explosions. Coordinated fire prevention and education with fire department personnel.

- Manchester Fire Rescue EMS, CT 1993 – 2011
 - Firefighter/EMT
Responded to all fire and emergencies to provide fire suppression, rescue and emergency medical services. Responsible for fire prevention and education. Plan and implement various operational and educational programs. Fire apparatus driver and operator.
- New York Board of Fire Underwriters, NYC 1991 – 1993
 - Fire Patrolman
Responded to all fires and emergencies with the Fire Department of New York and provide salvage operations for the protection of property and contents in commercial, high-rise residential buildings and structures from the effects of fire, smoke and water. Reset fire sprinkler systems to operational efficiency. Provide fire prevention and education programs and materials.

Education and Certifications

- Fire Science, M.S.: University of New Haven (2011)
- Fire Administration, B.S.: S.U.N.Y. Empire State College (2006)
- Graduate Certificate Forensic Science Advanced Investigation: Dr. Henry C Lee College of Criminal Justice and Forensic Science, Connecticut (2011)
- Certified Fire Investigator: International Association of Arson Investigators (IAAI)
- Certified Fire and Explosion Investigator: National Association of Fire Investigators (NAFI)
- Certified Fire Investigation Technician: International Association of Fire Investigators (IAAI)
- State Certified Fire Inspector/Investigator: Connecticut (2007)
- Certified Firefighter I: National Board on Fire Service Professional Qualifications (1993)
- Certified Firefighter II: Connecticut (2000)
- Certified Fire Officer I & II: Connecticut (2002, 2004)
- Certified Fire Instructor I: Connecticut (2003)
- Certified Juvenile Firesetter Intervention Specialist I: Connecticut Fire Academy (2013)
- Certified Juvenile Firesetter Intervention Specialist II: Connecticut Fire Academy (2014)
- Youth Firesetter Prevention & Investigation Level II: National Fire Academy (2014)
- Explosives/IED Awareness Certification: State of Connecticut (2010)

- Memberships: International Association of Fire Investigators; National Association of Fire Investigators; International Association of Firefighters; Connecticut Fire Marshals Association; The National Criminal Justice Honor Society, Alpha Phi Sigma

Continuing Education

- International Association of Fire Investigators: Forensic Photography (2017); Arson Investigators Seminar (2017); Arson Investigators Seminar (2016); I.A.A.I. Arson Investigators Seminar (2015); Arson Investigators Seminar (2014); Arson Investigators Seminar (2013); Arson Investigators Seminar (2012); Arson Investigators Seminar (2011)
 - Advanced Fire Investigation School, Office of State Fire Marshal, Connecticut (2009)
 - Connecticut State Police FEIU: 16th Vehicle Fire Investigation School Connecticut State Police FEIU (2016); Vehicle Fire Investigation School Connecticut State Police FEIU (2008)
 - Federal Bureau of Investigation: Response to VBIED & Suicide Bomber Incidents for Fire Responders, F.B.I. (2012); Indoor Post Blast School, Federal Bureau of Investigation & Connecticut State Police (2010)
- Other: Statement Analysis Interviewing Techniques (2018); Explosive Recognition for Investigators (2016); Arson Seminar, Saint Anselm College (2015); Fire and Arson Fatality Fire Scene Investigation, Public Agency Training Council (2013); Forensic Investigations, Peter Vallas Associates, Inc. (2013); Connecticut Fire Marshals Association Annual Conference (2013); Accelerant Detection K-9, Connecticut Fire Academy (2011)



Rimkus Consulting Group, Inc.
15311 NE 90th Street
Redmond, WA 98052
(877) 677-6157 Telephone
(425) 629-1799 Facsimile

April 6, 2017

Re: RCG File No:
LLV Number:
VMF Location:
Subject:

76102179
7203129
3825 South Warner Street in Tacoma, Washington
Preliminary/Final Report

Dear

On February 16, 2017, Rimkus Consulting Group, Inc. was retaining to examine the vehicle fire loss involving USPS LLV 7203129, VIN 1BBS10E452300607. The vehicle was examined at the USPS Tacoma VMF located at 1100 Kings Road in Tacoma, Washington. The fire incident occurred on February 14, 2017.

In the course of our work, we examined and documented the fire damaged vehicle on March 15, 2017, due to inclement weather. Our work to complete this assignment was performed by Fire Consultant Ted J. Hickey, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach was recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at and around the battery positioned on the right side of the engine compartment at the terminal.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of the failure of a plastic battery clamp which was recovered from the parking

space the vehicle had been parked in the day before. This left the battery unsecured to fall over within the engine compartment coming in direct contact with the alternator housing creating an adverse electrical event.

Observations

Exterior Inspection:

Examination of the vehicle began at the front of the vehicle and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The rear and mail side exterior walls suffered moderate smoke and heat damage. The driver side exterior wall also sustained moderate smoke and heat damage.

We observed extensive thermal damage to the entire front exterior of the vehicle and drivers side. Both doors were open and in their slider position next to the cargo box. The door windows were penetrated by thermal damage. We observed the grill as intact.

The rear overhead roll-up door was heavily smoke stained and the seals were melted. This door was open at the time of the fire. The front fenders were heavily damaged by thermal energy at the rivet level just above the front tires.

Interior Inspection:

While examining the interior of the vehicle, the operator's compartment revealed severe fire damage while the cargo compartment sustained moderate smoke and heat damage. An analysis of the fire patterns in this area indicated that the fire extended into this area from the engine compartment and did not originate on the interior.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. We observed severe fire damage to the engine compartment including all combustibles within the engine compartment. We were able to detect an acceptable level of oil on the dipstick. We also examined the transmission fluid level and detected an acceptable level of fluid on the dipstick. We were unable to examine the power steering fluid due to the severe fire damage in the engine compartment. The battery and fuse panel suffered severe fire damage.

While examining the battery cables, we observed arcing and separation to the cable leading from the battery to the starter. The plastic insulation on the battery cable had been consumed by fire and while examining the bracket closest to the starter, we observed arc damage. There were a total of two brackets that were used to secure the cable. The cable was separated at the bracket during the fire event and an arc bead was observed to the upper portion of the cable.

Fire patterns indicated the progression of the burn patterns extended from the driver's side of the engine compartment to the passenger and rear areas. Many of the consumable components were destroyed with the exception of some of the lower rubber parts. We observed the positive and negative battery connectors lying on the lower frame of the vehicle. Fire debris in the cargo compartment was examined and no recognizable battery plates or parts of the battery were discovered.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of fire damage along the bottom side of the engine as well as the sides of the engine. The involved LLV was mounted on a GM frame. The fuel lines were examined and it appeared the lines had failed during the fire progression. The fuel tank was examined and the vehicle fuel filter system was equipped with a GM filter. Both were free of fire damage. The exhaust system was intact and the transmission did not reveal any leaks. The forward undercarriage was damaged on the driver's side by thermal energy which had removed the paint from the frame. We observed aluminum melted over the frame.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage. We were unable to determine the status of the fuses.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment. The specific area of origin was at and around a battery cable routed through the area of fire origin that sustained severe adverse electrical damage. The area of fire origin was identified as the upper portion of the driver's side of the engine, beginning at the alternator and extending back the length of a battery. Based upon witness statements, the battery was lying on its side, on the engine, with its jumper posts facing the passenger side. The carrier observed the battery igniting after he

opened the hood. A distinct dent, along with arcing and pitting, were observed on the side of the alternator in the general area where the battery would have landed in a fall off the tray.

Contributing Factors:

The primary contributing factor was the failure of a plastic battery clamp which was recovered from the parking space the vehicle had been parked the day before. This left the battery unsecured. Prior to the fire the driver turned a corner on and heard a "bump" sound.

Evidence Collected:

No evidence was collected.

Interviews:

On March 15, 2017, we interviewed the Supervisor of Vehicle Maintenance at the Tacoma, Washington VMF. We learned the carrier had made a turn on a snowy, pot hole filled road when he heard a load bump within the engine compartment. He reported that he soon observed smoke coming from the engine compartment, near the windshield. Mr. provided maintenance records for the vehicle for the past two years and the vehicle battery had been replaced in that same period of time. He stated that he had not experienced any major mechanical problems with the vehicle.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,

RIMKUS CONSULTING GROUP, INC.

Ted J. Hickey

Ted J. Hickey, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

April 6, 2017
RCG File No. 76102179

Photograph 1

Damage to the front and passenger compartment of the vehicle was extensive.



Photograph 2

Exemplar indicating proximity of the battery the alternator.



April 6, 2017
RCG File No. 76102179

Photograph 3

Dent, arcing, and pitting on the alternator.



April 6, 2017
RCG File No. 76102179

Photograph 4

Clamp discovered in parking space - this was the only vehicle for which one was not accounted.



April 6, 2017
RCG File No. 76102179

CVs



TED J. HICKEY, CFI FIRE CONSULTANT

Mr. Hickey is a graduate from Columbia Southern University with an Associate of Applied Sciences Degree in Fire Science. He is a Certified Fire Investigator (C.F.I.) through the International Fire Service Accreditation Committee (I.F.S.A.C.). Ted is an International Code Council Certified Fire Code Inspector I and II. He has completed numerous educational seminars and continuing education courses. Ted has experience in fire origin and cause investigations, researching fire codes and training and evaluating fire investigators. He has conducted fire and explosion investigations that include commercial, residential, and automotive property.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S. Fire Science

Columbia Southern University – 2010

Certified Fire Investigator (C.F.I.) International Fire Service Accreditation Congress – 2010

Certified Fire Inspector II – International Code Council

January 2005 – Certification Number: 5098551

Member:

International Association of Arson Investigators – IAAI

International Association of Arson Investigators – IAAI Washington Chapter

National Association of Fire Investigators – NAFI

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2000 – 2015	Renton of Renton WA - Fire Inspector/Investigator
1986 – 1999	City of Renton Washington - Firefighter
1983 – 1986	City of Edmonds WA - Firefighter

DETAILED PROFESSIONAL EXPERIENCE:

RIMKUS CONSULTING GROUP, INC.

2015 – PRESENT

Fire Consultant

Conduct fire, arson, and explosion investigations including residential, commercial, marine and automobile losses for insurance companies and law firms. Collect and preserve evidence through precise documentation to ensure chain of custody. Conduct interviews with witnesses, responding firefighters, state fire marshal agencies, and other pertinent third party organizations. Prepare detailed, written investigative reports as to the final conclusions and opinions of the subject loss. Provide technical and scientific support to clients for subrogation and litigation purposes. Conduct code compliance research including electrical, gas, and installation code violations. Assist personnel with product design failure



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road, Suite 224
Atlanta, Georgia 30339
(770) 436-9399 Telephone
(770) 438-2189 Facsimile

February 8, 2018

Re: RCG File No: 50807721
LLV Number: 7203715
VMF Location: 3900 Crown Road SE Atlanta, Georgia
Subject: Preliminary/Final Report

On January 13, 2018, a fire occurred in a US Postal Service vehicle near the intersection of Beersheba Church Road and Jackson Street in Locust Grove, Georgia. On January 29, 2018, we inspected the 1987 GMC, LLV 7203715, VIN 1GBBS10E6J2301273, at the Atlanta Vehicle Maintenance Facility located at 3900 Crown Road SE in Atlanta, Georgia.

In the course of our work, we interviewed the carrier, inspected the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Gregory M. Cloer, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator's compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the rheostat headlamp switch positioned in the left side of the dashboard.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

Inspection of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side.

Movement and intensity fire patterns were observed on the front, sides, and the top of the vehicle indicating a fire originating in the passenger compartment. Most of the engine hood and the bulkhead of the vehicle was consumed or melted during the fire event. A ventilation opening was observed in the roof of the cargo compartment. This hole was consistent with the fire ventilating through the roof from the cargo compartment. There was no evidence to indicate that the LLV had recently been involved in a collision. Movement and intensity fire patterns on the outside of the vehicle indicated a fire originating at the operator's compartment of the vehicle.

Interior Inspection:

Inspection of the interior revealed the most severe fire damage had occurred in the dashboard area on the vehicle. The majority of the combustible materials in and around the dashboard area had been consumed during the fire event. The fire damage progressed from the interior to the cargo area of the LLV. Burned remains of the headlamp switch assembly were recovered from the floor of the vehicle.

Engine Compartment Inspection:

The engine compartment was inspected. The vehicle was equipped with a 2.5L engine. The vehicle was also equipped with a fuel injected throttle body and electronic ignition. Some thermal and fire damage was observed in the engine compartment. Most of the combustible materials towards the engine compartment were observed mostly intact. The greatest degree of fire damage was observed at the rear of the engine compartment in the area of the bulkhead. The bulk head between the passenger and engine compartment was mostly consumed by the fire. The conductors at the back of the engine compartment were missing insulation. The fuel system was examined and found to be intact and observed with no fire damage. The battery for the vehicle was located at the front right side of the engine compartment and had sustained fire damage. The engine compartment electrical conductors were examined and found to be free of adverse electrical events. The vehicle fluids were examined and were found

to be within their respective operating range. The engine compartment was eliminated as an origin of the fire.

Undercarriage Inspection:

The undercarriage was examined. The involved LLV was mounted on a GM frame. The frame rail components were undamaged. The associated fuel lines and filter system were intact and free of damage. The under carriage was eliminated as the origin of the fire.

Fuse Panel Inspection:

The fuse panel had sustained severe fire damage. All of the fuse panel combustible materials had been consumed during the fire. The electrical conductors and their connectors were observed with no adverse electrical event. The fuse panel was eliminated as the origin of the fire.

Area of Fire Origin:

Based on our observations and witness statements it was determined that the area of fire origin was in the driver's compartment on the left side of the steering column at the headlamp switch.

Contributing Factors:

Issues with the headlamp switch in the area of origin could not be eliminated. The involved components were collected and sent to Technical Fire Manager David R. Meyers, IAAI-CFI in the Charlotte, North Carolina office for analysis. An examination of the artifacts was conducted by Mark H. Nelson, P.E. The rheostat headlight switch could not be eliminated as a cause of the fire.

Evidence Collected:

Item A: Headlamp Switch

Interview:

On February 4, 2018, an email was sent to the postmaster requesting the carrier to call for an interview. As of February 7, 2018, the carrier has not called for an interview.

This preliminary report contains a summary of our findings and does not include a full description of the investigative tasks and methodology we took to reach our

conclusions. If a full final report of findings is needed, one will be completed at the request of USPS.

Photographs taken during our work were retained in our files and are available to you upon request.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

February 8, 2018
RCG File No. 50807721

Photograph 1

View of the front and mail exterior.



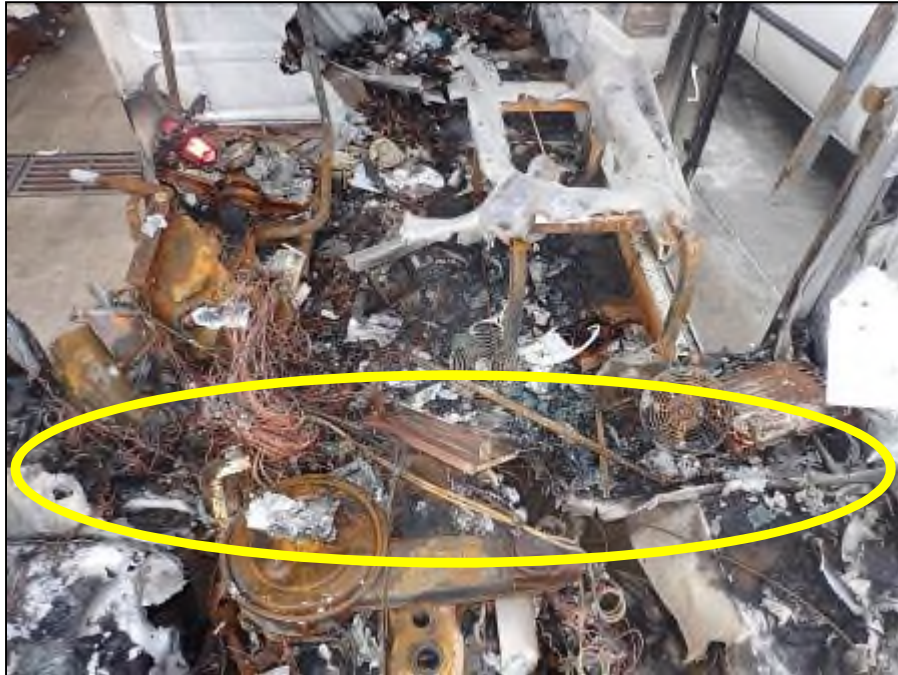
Photograph 2

View of the driver and rear exterior.



Photograph 3

View of the dashboard area.



Photograph 4

View of the headlamp switch on the driver's side floor.



February 8, 2018
RCG File No. 50807721

Photograph 5

View of the headlamp switch.



Photograph 6

View of the headlamp switch and electrical conductors.



February 8, 2018
RCG File No. 50807721

CVs



**GREGORY M. CLOER, C.F.I.
FIRE CONSULTANT**

Mr. Cloer is a Certified Fire Investigator (C.F.I.) by Georgia P.O.S.T., NPQ, N.F.A. and IAAI for fire/arson investigation, and is certified by Georgia P.O.S.T. as a basic peace officer. Mr. Cloer has also served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting & prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator. Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. Mr. Cloer has testified as an expert in criminal court related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certification, P.O.S.T. Basic and Advanced Arson Investigation (Currently Fire Investigator I and II)
Certification, P.O.S.T. Basic Peace Officer
N.F.A. Fire/Arson Investigation
P.O.S.T. Arson Investigator
IAAI-CFI
NPQ Certified Fire Investigator
NPQ Fire Instructor

TRAINING/CERTIFICATES

Certified Fire Investigator • Fire Instructor • Peace Officer • EMT • Paramedic • Advanced Fire Investigator • Advanced Fire Cause & Origin Expert Witness

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1986 – 2015	Cobb County Fire and Emergency Services

DETAILED PROFESSIONAL EXPERIENCE:

RIMKUS CONSULTING GROUP, INC.

2015 - PRESENT

Fire Consultant

Conduct fire, arson, and explosive investigations including residential, commercial, and vehicular losses for clients. Collect and preserve evidence ensuring a precise chain of custody. Conduct interviews with victims, property owners, witnesses, investigators, and pertinent third party organizations. Photograph scenes and prepare detailed written investigative reports as to the conclusions and opinions of the subject loss. Testify in related depositions and trials.



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1752 West 1180 South, Suite 8
Woods Cross, Utah 84087
Telephone: (855) 249-6568

September 25, 2019

Re: RCG File No: 100012705
LLV Number: 7204647
VMF Location: 3690 Pacific Avenue Ogden, Utah
Subject: Preliminary/Final Report

Dear,

A fire occurred involving a US Postal Service LLV on August 24, 2019. This fire occurred at 145 E. State Street in Farmington, Utah while being driven by the carrier, Jessica Cato.

Rimkus Consulting Group, Inc. was retained to examine 1988 Chevrolet LLV 7204647, VIN 1GBBS10E3J2302185. Our work to complete this assignment was conducted by Fire Consultant Dean B. Hunt, IAAI-CFI. This report was reviewed by Technical Fire Manager David Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated at the bulkhead between the engine compartment and the driver's compartment on the mail side of the LLV.
2. The specific area of origin could not be conclusively identified due to the severe fire damage to the dashboard and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severe fire damage to the dashboard area and the lack of remaining physical evidence for examination; however, a failure event in one of the continuous energized switches or relays in the dashboard area could not be eliminated.

Observations

Exterior Inspection:

The hood, windshield and roof to the driver's compartment had been consumed by the fire. The front left side fender had mostly been consumed by the fire. The right front fender was damaged from the fire. The doors to both the mail side and the driver's side were damaged from the fire. This damage was from just below the window and extended up and around the window to the roof on both doors. The exterior of the cargo compartment was damaged from the fire at just below the roof where the door met the cargo compartment. This damage was part of the fire extension from the window. There was damage from smoke along the roof line around the cargo compartment and around the rear roll-up door.

Interior Inspection:

The interior of the cargo compartment was damaged from smoke throughout. The driver's compartment was damaged from fire throughout. The bulkhead between the driver's compartment and the engine compartment had been consumed by the fire. The seat had been consumed by the fire with only the metal frame remaining. The dashboard had been consumed by the fire as well as the fuse panel. There were the remains of a wooden shelf unit in the center of the front of the driver's compartment. This shelf unit contained three aerosol cans. The guard from a fan was on the floor on the mail side. There were some electrical conductors in this area. Some of these conductors were melted on the ends.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment was observed with severe fire damage. Combustible components were consumed and collapsed. The battery casing was melted. All electrical wiring was severely damaged. Analysis of the fire patterns in the engine compartment indicated it was damaged by fire extension from the dashboard and bulkhead area near the driver side of the vehicle. The electrical conductors in the engine compartment were examined. The insulation had been consumed by the fire. None of the electrical conductors were melted nor indicated any electrical activity. This included the electrical conductors from the battery to the alternator, the starter motor, and to the area of the fuse panel.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head. All four tires were intact.

Fuse Panel Inspection:

The fuse panel had been consumed by the fire and therefore could not be examined.

Area of Fire Origin:

This fire originated at the bulkhead between the engine compartment and the driver's compartment on the mail side of the LLV.

Potential Contributing Factors:

The damage to the engine compartment and the driver's compartment was more severe on the mail side. The firewall at the bulkhead had been consumed by the fire. Other than the metal guard from the fan, no other remains of the fan were discovered. Some of the electrical conductors near the fan location were melted.

Evidence Collected:

There were no remains of the fuse panel or of the fan. No evidence was collected.

Interviews:

The driver reported that there was not anything out of the ordinary about how the LLV operated that day. She did mention that she could smell an "oily" smell whenever she would drive it up a hill or on a long stretch. She parked the LLV at approximately 3:00 PM. and the fire occurred at 10:00 PM.

Service Records:

A review of the service records for the listed LLV was completed. Preventative maintenance including oil change and filter replacement was completed on June 27, 2019.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Dean B. Hunt

Dean B. Hunt, IAAI-CFI, NAFI-CFEI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

September 25, 2019
Rinkus File No. 100012705

Photograph 1

Front view of the LLV.



Photograph 2

Driver's side at area where bulkhead had been located.



September 25, 2019
Rimkus File No. 100012705

Photograph 3

Fan guard on mail side.



Photograph 4

Electrical conductors near where fan guard was discovered.



September 25, 2019
Rinkus File No. 100012705

Photograph 5
Engine compartment area.



Photograph 6
Severe fire damage to the front of the vehicle and engine compartment.



September 25, 2019
Rinkus File No. 100012705

Curriculum Vitae

Dean B. Hunt, CFEI

Fire Consultant
Fire Division



Background

Along with his B.S. degree in Public Safety and Emergency Management, Mr. Hunt has over 30 years in the fire service with the last 19 years working as a full-time fire investigator and fire marshal.

He is a Certified Fire and Explosion Investigator (CFEI) through the National Association of Fire Investigators as well as a Certified Fire Inspector II with the International Code Council. Mr. Hunt is experienced in the interpretation and enforcement of the International Building Code, the International Residential Code, and the International Fire Code as it relates to fire, life safety and egress in existing buildings and new construction as well as with residential and commercial fire protection systems.

In addition to over 600 fire investigations, Mr. Hunt has conducted over 200 live fire training tests utilizing modern furnishings and materials.

Mr. Hunt has extensive experience in public speaking as well as presenting at both national and local conferences including the National Fire Protection Association (NFPA) Conferences and Vision 20/20 Symposium of Model Programs of Fire Prevention. He has also been recognized for his Fire Prevention Programs in National Fire Academy publications and courses as a 'model program' in Fire Prevention.

Contact Information

(385) 207-2699

dhunt@rimkus.com

1752 West 1180 South,
Suite 8
Woods Cross, UT 84087



Rimkus Consulting Group, Inc.
826 Creighton Road, Suite 101A
Pensacola, Florida 32504
(850) 475-1378 Telephone
(850) 475-9226 Facsimile
Certificate of Authorization No. 8301

August 6, 2018

Re: RCG File No: 53006704
LLV Number: 7205044
VMF Location: 100 Congress Street Mobile, Alabama
Subject: Preliminary/Final Report

Dear

On July 2, 2018, it was reported a fire occurred in a US Postal Service vehicle located at 808 Daphne Street in Daphne, Alabama. Rimkus Consulting Group, Inc. was retained to examine LLV 7205044, VIN 1GBBS10E3J2302588. The inspection of the vehicle occurred on July 17, 2018, at the Mobile VMF at 100 Congress Street in Mobile, Alabama.

In the course of our work, the vehicle was inspected and photographed, maintenance records and a written statement by the carrier were reviewed, and maintenance personnel were interviewed. Our work to complete this assignment was performed by Fire Consultant Hubert T. Peete, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 Standard for "Professional Qualifications for Fire Investigator".

Conclusions

1. The vehicle sustained moderate to severe fire damage to the engine compartment from a fire originating within the engine compartment.

2. Based on the observed patterns of fire damage and a systematic evaluation of the remaining physical evidence the fire originated at the right side of the engine compartment at the engine starter.
3. The specific ignition sequence and cause of the fire was determined to be excessive heat (produced by prolonged attempts to start the vehicle) from the engine starter that ignited nearby combustibles.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The front grill and lights of the LLV were observed to be intact with no fire damage. The hood was moderately fire damaged with a circular burn pattern near the center and bulkhead. Within the circular pattern, the paint was mostly consumed and a small section of the hood and air inlet vents at the bulkhead had melted. No other damage was observed on the exterior of the vehicle.

Based on the fire patterns observed, it was determined the fire initiated within the engine compartment.

Interior Inspection:

Light to moderate smoke staining was observed throughout the interior. The driver's side dash and window visor were moderately burned and heat damaged. A plastic panel attached to the bulkhead at the left side of the driver's controls exhibited minor melting along one edge. The driver's controls and fuse panel were not damaged by the fire.

Engine Compartment Inspection:

The vehicle was equipped with a 2.5L, four-cylinder engine with a GM throttle body fuel injected system and a standard ignition coil. The engine compartment was moderately fire damaged with the most extensive burning in the area of the engine starter at the right side. The least damaged area was at the front of the compartment at the front of the engine and radiator. Heat damage was present on most of the plastic components at the right side and rear of the compartment. The fire did not involve the battery, alternator, or any of the large circuits attached to these components. The fuel system was lightly damaged and there were no indications it was the cause of the fire. At the rear of the engine, the insulation of the electrical conductors for several wiring harnesses was consumed by the fire. The damage observed at the left side of the engine compartment was consistent with fire spread from the right side.

The engine starter was located at the right side of the engine at the lower rear. The starter's positive electrical conductor was intact and mostly undamaged. Most of the combustible components above and to the rear of the engine starter were consumed or heavily fire damaged. The patterns of fire progression were consistent with a fire originating at or near the engine starter and then extending upward along the combustible components near the bulkhead.

Undercarriage Inspection:

No damage was observed to the undercarriage or drivetrain. The LLV was mounted on a GM frame and was undamaged.

Fuse Panel Inspection:

The fuse panel was not damaged by the fire.

Area of Fire Origin:

The fire originated at or near the engine starter located at the right side of the engine compartment at the lower level of the bulkhead.

Potential Contributing Factors:

Prolonged attempts of engaging the engine starter to start the engine resulted in the starter overheating and igniting nearby combustible components. According to the maintenance records, there had not been any reported problems or repairs made to the starter within the last two years.

Evidence Collected:

No physical evidence was retained during the inspection.

Carrier Statement:

The mail carrier reported in a written statement that she attempted to start the vehicle three times. After the third attempt, she noticed smoke coming from the dash and then from the hood.

Service Records:

A review of the service records revealed no recent repairs or service that would have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Hubert T. Peete

Hubert T. Peete, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curricula Vitae

August 6, 2018
RCG File No. 53006704

Photograph 1

View of the front of the subject LLV.



Photograph 2

View of the right side.



August 6, 2018
RCG File No. 53006704

Photograph 3
View of the left side.



Photograph 4
View of the operator's position.



August 6, 2018
RCG File No. 53006704

Photograph 5

View of damage to the hood.



Photograph 6

View of the engine compartment.



August 6, 2018
RCG File No. 53006704

Photograph 7
View of the fuel system.



Photograph 8
View of the battery.



Photograph 9

View of damage typical of the wiring harnesses along the bulkhead.



Photograph 10

View of the starter with origin area notated.



August 6, 2018
RCG File No. 53006704

Curricula Vitae



HUBERT T. PEETE, IAAI-CFI, CFEI, CVFI FIRE CONSULTANT

Mr. Peete began his fire service career at the age of 16 in 1983, as an Explorer Scout with his hometown fire department. He developed an interest in the origin and cause of fires early in his career and has pursued to increase his knowledge of the subject throughout most of his life. He continued as a volunteer firefighter and officer with his home town for 20-years. After attending college, he entered service with the City of Pelham Fire Department in Pelham, Alabama. He served in many capacities and retired as a company officer in December 2015, after 25-years of service.

Mr. Peete has spent the last 15-years working as a private fire consultant and has investigated over 1000 fires. He has been certified and testified as an expert witness in both Federal and Circuit courts.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

- Bachelor of Science, Public Safety Administration – Athens State University, Athens, Alabama - 1998
- Associate in Applied Science, Fire Science Management – Shelton State Community College, Tuscaloosa, Alabama – 1996
- Montevallo High School – Montevallo, Alabama - 1985

EMPLOYMENT HISTORY

2017 – Present	Rimkus Consulting Group, Inc.
2003 – 2017	Crain & Associates, Inc., Investigator
2002 – 2003	Crain Massengale, Inc., Fire Scene Technician
1990 – 2015	City of Pelham Fire Department, Fire Lieutenant
1995 – 2000	City of Montevallo Fire Department, Fire Marshal



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
651 Holiday Drive, Suite 300
Pittsburgh, PA 15220
Telephone: (412) 857-3002

December 4, 2019

Re: RCG File No: 100018203
LLV Number: 7205109
VMF Location: 200 Cava Drive Clarksburg, West Virginia
Subject: Preliminary/Final Report

On October 19, 2019, a fire involving USPS LLV 7205109 occurred. The loss location was reported to be 109 Old Turnpike Road in Parkersburg, West Virginia. LLV 7205109 was examined at the VMF located at 200 Cava Drive in Clarksburg, West Virginia.

Rimkus Consulting Group, Inc. was retained to examine 1988 LLV 72051109 with VIN 1GBBS10E3J2302669. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver and documented the vehicle with photographs. In the course of our work, the vehicle examination was conducted by Fire Consultant Brian L. Balega, IAAI-CFI (V), on October 31, 2019. This report was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association NFPA 921 – “Guide for Fire & Explosion” and NFPA 1033 – “Standard for Professional Qualifications for Fire Investigator”.

Conclusions

1. The vehicle sustained severe fire damage to the engine and passenger compartments. Based on the fire patterns observed, it was determined the fire initiated in the engine compartment then progressed into the interior compartment through the windshield and bulkhead.

2. The fire originated in the engine compartment, near the mail side quarter panel where the windshield washer reservoir, daytime light module and the heater components were located. The heater components and windshield washer reservoir sustained the most severe damage. The conductors for the daytime lights were found separated from their ends. The multi-stranded conductors had adverse electrical activity (welding of the multi-strand conductors).
3. The specific ignition sequence and cause of the fire was determined to be due to an adverse electrical event in the wiring for the daytime running lights. Based on the location of the electrical activity we determined the wiring for the light was routed along the quarter panel where the bracket for the windshield washer was located. It was determined that the severe loss of mass in this area was the result of the wiring chaffing on the metal vehicle parts degrading the protective insulation causing the wiring to fault and ignite the insulation of the wiring and nearby combustibles.

Observations

Exterior Inspection:

The vehicle sustained severe fire damage to the engine and passenger compartments. Based on the fire patterns observed, it was determined the fire initiated in the engine compartment then progressed into the interior compartment through the windshield and bulkhead. The rear cargo door sustained minor smoke/soot damage to the exterior from fire development inside the rear cargo area.

Interior Inspection:

The cargo area sustained the least fire damage. The front driver's seat and mail shelf sustained severe fire damage. Based on fire pattern analysis and interviews conducted, it was determined that the fire originated in the engine compartment and progressed through the bulkhead/windshield area into the interior compartment.

Engine Compartment Inspection:

The engine compartment sustained severe fire damage. The vehicle was equipped with a 2.5 liter 4 cylinder engine with a standard ignition coil. Based on fire patterns and mass loss the fire origin was determined to be in the mail side rear engine compartment near the mail front quarter panel.

In this area, the engine compartment was where the windshield washer reservoir, daytime light module and heater components and electrical wiring were located.

Undercarriage Inspection:

No fire damage or effects were visible to the undercarriage behind the engine area.

The LLV was mounted on a GM chassis.

Fuse Panel Inspection:

The fuse panel was positioned under the far right side of the dashboard near the side panel. The outer plastic cover had melted but was still observed surrounding the fuses indicating the fire did not originate at this location.

Area of Fire Origin:

The fire originated in the engine compartment, near the mail side quarter panel where the windshield washer reservoir, daytime light module and the heater components were located. The heater components and windshield washer reservoir sustained the most severe damage. The conductors for the daytime lights were found separated from their ends. The multi-stranded conductors had adverse electrical activity (welding of the multi-strand conductors).

The engine and transmission oil were inspected. Small metal particulates were observed on the dipstick.

Potential Contributing Factors:

An adverse electrical activity in the wiring for the daytime running lights. Based on the location of the electrical activity, we determined the wiring for the light was routed along the quarter panel where the bracket for the windshield washer was located. We suspect due to the severe loss of mass in this area that the cause of the electrical activity was the result of the wiring chaffing on the metal vehicle parts degrading the protective insulation causing the wiring to fault and ignite the insulation of the wiring and nearby combustibles.

Due to the driver commenting that the vehicle was having problems with stalling and the presence of metal particulates, it is our opinion the vehicle had an unrelated internal problem which didn't cause the fire but may have contributed to the problematic operation of the vehicle.

Evidence Collected:

None collected.

Service Records:

A review of the service records on the vehicle didn't show any evidence of a prior electrical or daytime running light problem.

Interview:

Carrier/driver, United States Postal Service, provided the following information:

- He stated this was his first time driving this vehicle as his primary vehicle was at the maintenance facility due to another carrier having an accident in it.
- The day of the fire, he conducted his pre-trip inspection and found the vehicle in working order.
- As he was driving on Old Turnpike Road, the vehicle began to slow down. Around the same time, he heard a clicking noise.
- He pulled over and the vehicle shutoff. He attempted to restart the vehicle about five times when he began to notice smoke from the right-side dash area.
- He was able to empty the mail out of the vehicle.
- After about 20 minutes, he saw fire beginning to develop from the middle of the engine compartment near the windshield.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Brian L. Balega

Brian L. Balega, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

December 4, 2019
Rimkus File No. 100018203

Photograph 1

Front of the vehicle, severe fire damage to the mail side of the vehicle.



Photograph 2

The engine compartment.



December 4, 2019
Rimkus File No. 100018203

Photograph 3

The flasher unit with severe fire damage.



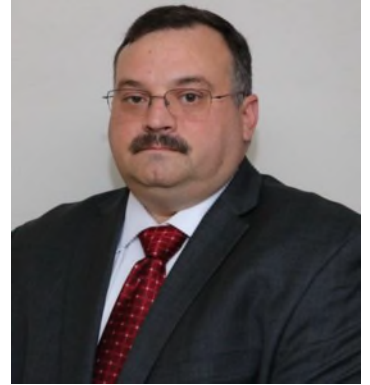
Photograph 4

Adverse electrical activity.



December 4, 2019
Rinkus File No. 100018203

Curriculum Vitae



Brian L. Balega, CFI(V), CFEI

Senior Consultant

Fire Division/Pittsburgh District

Background

Mr. Balega studied Criminal Justice and Investigations during his undergraduate career, earning a B.S.O.E. degree in Human Services/Criminal Justice from Wayland Baptist University. This U.S. Army veteran has spent more than 20 years of his career in fire and police services, where he has investigated and determined the origin and cause of more than 600 fires involving commercial and residential structures, passenger vehicles, marine vessels, and heavy equipment.

Mr. Balega is a Certified Fire Investigator with Vehicle Endorsement (CFI(V)) with the International Association of Arson Investigators (IAAI) and a Certified Fire and Explosion Investigator (CFEI) with the National Association of Fire Investigators (NAFI). He possesses extensive knowledge of fire and criminal investigations due to his experiences as a Police Officer with the Anchorage Police Department, as a Federal Task Force Officer with the Drug Enforcement Administration, and as a Fire Investigator with the Anchorage Fire Department. He is also a court-qualified expert witness in both criminal and civil proceedings. As a fire investigation expert, Mr. Balega has instructed numerous educational seminars and provided training to other industry professionals throughout his career. In 2012, Mr. Balega was honored with the State of Alaska Fire Service Instructor of the Year award for teaching members of state and local fire/police departments the foundational aspects of fire

Contact Information

(412) 952-5275

bbalega@rimkus.com

651 Holiday Drive,
Suite 300
Pittsburgh, PA
15220



Rimkus Consulting Group, Inc.
8200 Cameron Road, Suite C-140
Austin, Texas 78754
Telephone: (800) 783-8557
Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2019

September 26, 2019

Re: RCG File No: 100013359
LLV Number: 7206044
VMF Location: 8601 Stinson Avenue El Paso, Texas
Subject: Preliminary/Final Report

Dear ,

On August 12, 2019, a fire occurred involving US Postal Service LLV 7206044, VIN 1GBBS10E8J2303574. The fire caused damage to the vehicle, rendering it inoperable. No injuries or fatalities were reported.

Rimkus Consulting Group, Inc. was retained to conduct an investigation into the origin and cause of the fire. The investigation was assigned to and completed by Fire Consultant Nicholas Olson, IAAI-CFI (V). A technical review of this report was completed by Technical Fire Manager David R. Meyers IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment of the involved LLV.
2. The specific area of origin was at the exhaust manifold on the mail side of the engine. Engine oil was sprayed onto the exhaust manifold when an engine rod penetrated through the engine block.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a thrown rod through the engine block causing a hole that allowed engine oil to be expelled onto the hot exhaust manifold.

Observations

Exterior Inspection:

The exterior of the vehicle exhibited no fire damage. Peeled and missing paint was noted on the left side of the hood.

Interior Inspection:

No fire damage was noted within the interior of the vehicle.

Engine Compartment Inspection:

The 2.5 liter engine with standard ignition coil had been removed from the vehicle prior to inspection and was located in the cargo area. Fire damage was noted in the engine compartment. Several components had been replaced, however, melting was observed on wiring and plastic components. Soot deposits were noted on the underside of the hood. The engine sustained an obvious, catastrophic failure. A baseball size hole was noted in the right side of the engine block. A corresponding hole was also noted in the oil pan. Physical damage to the crankshaft and a broken connecting rod were visible through the hole in the engine block.

Undercarriage Inspection:

No fire damage was observed to the undercarriage of the vehicle.

Fuse Panel Inspection:

No fire damage was observed to the fuse panel area.

Area of Fire Origin:

The area of origin was determined to be the right side of the engine compartment. The fire was contained to this general area.

Potential Contributing Factors:

A catastrophic engine failure involving the internal rotating assembly was the main contributing factor to the cause of the fire. This failure caused broken, internal engine components to fracture the engine block resulting in a release of engine oil into the engine compartment. The oil was ignited by the hot surfaces of the exhaust manifold,

resulting in a small fire. No physical evidence was identified to support an alternative ignition scenario.

Evidence Collected:

No physical evidence was collected.

Interviews:

The LLV reportedly was being driven at the time of the fire. The carrier stated that she began to see smoke coming out the engine compartment after the vehicle over heated. The carrier exited the vehicle and observed fire from the engine compartment. The fire department responded and extinguished the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or services that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Nicholas J. Olson

Nicholas J. Olson, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

September 26, 2019
Rimkus File No. 100013359

Photograph 1

Involved vehicle as presented for inspection.



Photograph 2

Interior of involved vehicle.



Photograph 3
Engine compartment.



Photograph 4
Engine assembly, removed prior to inspection. Red arrow denotes block damage.



Photograph 5
Damage to engine block.

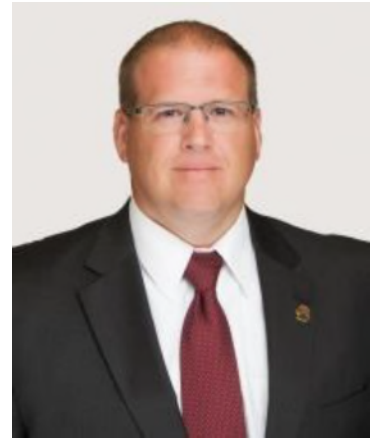


Photograph 6
Internal engine damage.



September 26, 2019
Rimkus File No. 100013359

Curriculum Vitae



Nicholas J. Olson, CFI(V), CFEI, CVFI

Fire Consultant
Fire Division

Background

Mr. Olson is a Certified Fire Investigator (CFI) by the International Association of Arson Investigators (IAAI) and a Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators (NAFI). Additionally, he holds the Motor Vehicle Fire credential endorsement through the IAAI and is also a Certified Vehicle Fire Investigator (CVFI) through NAFI. Mr. Olson holds active certifications in Texas as a Fire Investigator, Master Peace Officer, Firefighter, Fire Inspector, and Paramedic. Mr. Olson also has an associate degree in Criminal Justice and continues his pursuit of education through extensive continuing education and professional development training.

Mr. Olson has extensive experience in both the fire service and law enforcement with 19 years of service as a public safety professional and continues to serve as a firefighter, paramedic and police officer. Mr. Olson has experience in all facets of fire and explosion investigation procedures in both the public and private sector. Through his work, he has and developed positive working relationships with numerous local, state, and federal authorities.

As a full-time fire investigator, Mr. Olson's experience includes determining the origin and cause of fires in residential and commercial structures, vehicles, watercraft, heavy equipment and wildland areas. Mr. Olson has provided testimony in both criminal courts and civil depositions. He regularly provides continuing education presentations to insurance and subrogation professionals. Mr. Olson maintains a current, working knowledge of the latest edition of National Fire Protection Association (NFPA) 921, Guide for Fire and Explosion Investigations. Additionally, he has satisfied the educational requirements for all 16 job performance requirements as set forth by the 2014 edition of NFPA 1033, Standard for Professional Qualifications for Fire Investigator.

Contact Information

(512) 795-0811
njolson@rimkus.com

8200 Cameron Rd.
Suite C-140
Austin, TX 78754



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road SE, Suite 224
Atlanta, Georgia 30339
Telephone: (770) 436-9399

January 17, 2020

Re: RCG File No: 100021391
LLV Number: 7206305
VMF Location: 2 N. Fahm Street Savannah, Georgia
Subject: Preliminary/Final Report

On December 5, 2019, a fire occurred in a US Postal Service vehicle at 10701 Abercorn Street in Savannah, Georgia. On December 11, 2019, we inspected the 1988 Chevrolet LLV 7206305 with VIN 1GBBS10E5J2303855, at the Savannah Vehicle Maintenance Facility located at 2 N. Fahm Street in Savannah, Georgia. Reportedly, the vehicle had been started and the fire discovered by the driver when she saw flames coming from under the hood.

In the course of our work, inspected the vehicle, examined maintenance records and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant Gregory M. Cloer, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific ignition sequence and cause of the fire was inconclusive at the time of the inspection due to the lack of access at the defined area of fire origin.
3. A fuel leak from the modified fuel line connection cannot be eliminated as a contributing factor related to the cause of this fire.

Observations

Exterior Inspection:

Inspection of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. Fire movement patterns were observed extending from the hood at the base of the windshield, upward onto the windshield and top of the vehicle. Smoke patterns were observed along the cargo compartment at the roof line and rear cargo door. There were no other fire movement patterns observed along the remaining sides of the vehicle.

Interior Inspection:

Inspection of the cargo compartment of the vehicle revealed fire damage to the near the center area of the dashboard indicating the fire had traveled from the engine compartment into the interior compartment through the manufactured openings along the bulkhead. Smoke damage was observed throughout the remaining areas of the interior.

Engine Compartment Inspection:

The engine compartment was inspected. Fire movement patterns were observed extending from behind the engine along the passenger side in the area around the exhaust system. The fire movement patterns continued upward and into the bulkhead.

The vehicle was equipped with a 2.5L engine. The vehicle was also equipped with a fuel injected throttle body and direct coil ignition system. The battery had sustained thermal damage and its electrical conductors were observed intact. The electrical conductors in the engine compartment were examined. There was no abnormal electrical activity noted on the electrical conductors within the engine compartment.

The engine oil and transmission fluid were examined and observed to be within their respective normal operating range. The fuel system had been modified prior to the inspection. The modification included the relocation of the fuel filter from above the exhaust system to the undercarriage and an addition of a rubber flexible fuel line connected between the fuel filter and the steel fuel line to the throttle body.

Undercarriage Inspection:

Inspection of the undercarriage revealed fire patterns extending from the area of the fuel system modification connection near the exhaust system. There were no other fire movement patterns observed along the undercarriage of the vehicle.

The LLV was mounted on a GM frame. The fuel tank and fuel lines along the frame rail did not show any signs of failure. The exhaust system was intact. The transmission revealed a leak along the front side of the transmission.

Fuse Panel Inspection:

The fuse block was observed intact. There were four blown fuses observed in the fuse block. The following are the fuses description and amperage ratings:

1. Cigar Lighter – 25-Ampere (According to the fuse block diagram, the cigar lighter was rated for a 20-Ampere fuse.)
2. Hazard Lamps – 15-Ampere
3. Stop Lamps – 15-Ampere
4. Tail Lamps – 20-Ampere

The fuse block electrical conductors and their connectors were observed with no abnormal electrical event. The fuse panel was eliminated as the origin of the fire.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence the fire originated in the engine compartment. The specific area of origin was determined to be in the area of the exhaust system and the fuel line modification connection.

Potential Contributing Factors:

A potential contributing factor was most likely a failure of the connection point of the flexible fuel line to the steel fuel line above the exhaust system. A leak from this connection could possibly cause atomized gas to spray onto the hot exhaust system.

It is recommended that the engine be removed for further analysis and testing of the fuel system for leaks by a Mechanical Engineer.

Evidence Collected:

No evidence was collected.

Interviews:

We were not provided with the carrier's name or contact information.

Service Records:

A review of the service records did not reveal any recent work that may have contributed to the cause of the fire.

This preliminary report contains a summary of our findings and does not include a full description of the investigative tasks and methodology we took to reach our conclusions. If a full final report of findings is needed, one will be completed at the request of USPS.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

January 17, 2020
Rimkus File No. 100021391

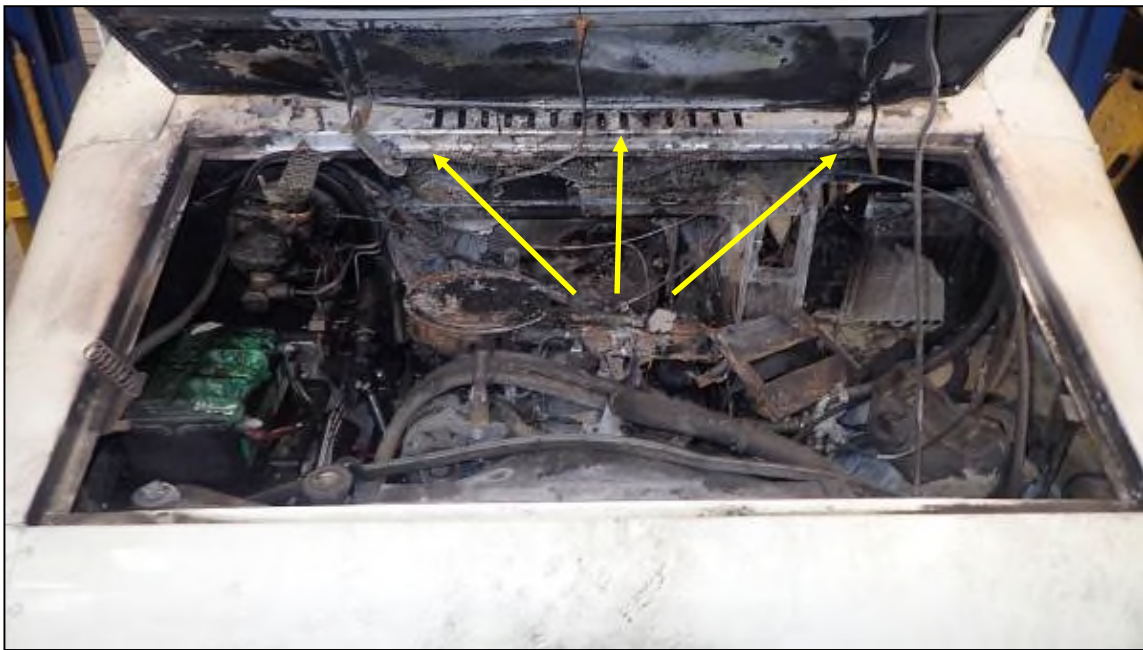
Photograph 1

View of the fire movement patterns along the front exterior.



Photograph 2

View of the engine compartment.



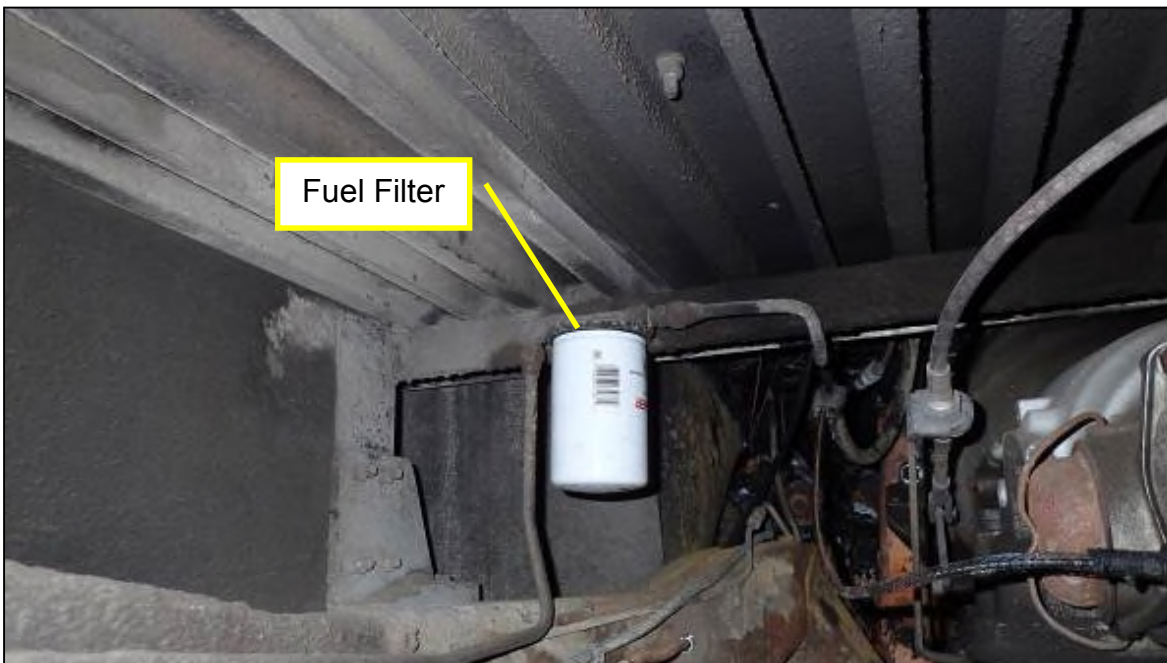
Photograph 3

View of the fire origin along the rear passenger side of the engine.



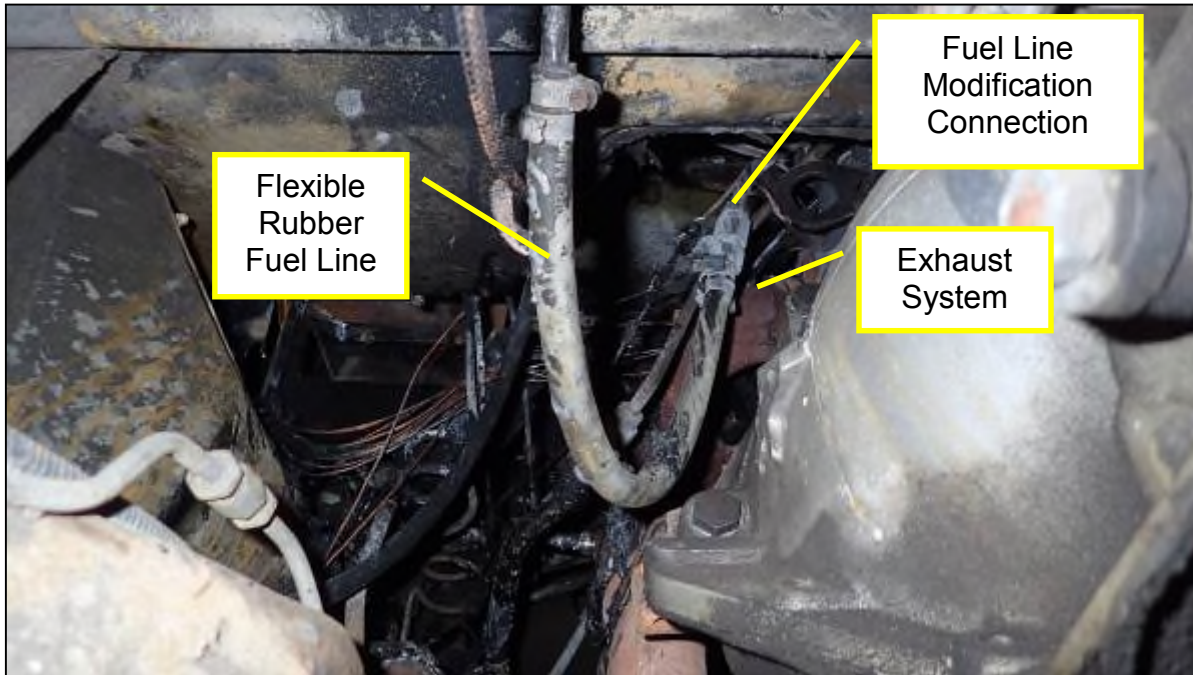
Photograph 4

View of the fuel system modification.



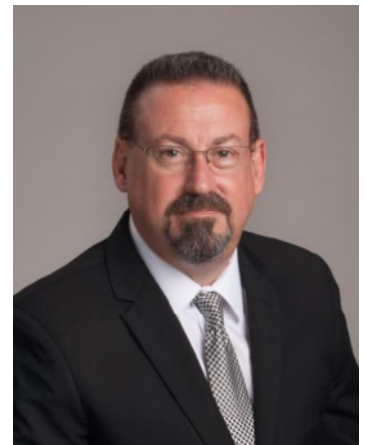
Photograph 5

View of the flexible rubber fuel line from the undercarriage.



January 17, 2020
Rimkus File No. 100021391

Curriculum Vitae



Gregory M. Cloer, CFI

Fire Consultant
Fire Division

Background

Mr. Cloer is a Certified Fire Investigator through the International Association of Arson Investigators and National Professional Qualification, a Certified Arson Investigator through Georgia Peace Officer Standards and Training Council (P.O.S.T.) and certified for fire/arson investigation through the National Fire Academy. He was certified by Georgia P.O.S.T. as a basic peace officer and served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting and prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator.

Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. He has testified as an expert in criminal and civil courts related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

Contact Information

(770) 436-9399

gcloer@rimkus.com

2030 Powers Ferry Road SE,
Suite 224
Atlanta, GA 30339



Rimkus Consulting Group, Inc.
560 Southwest 12th Avenue
Deerfield Beach, FL 33442
(954) 428-1422 Telephone
(954) 428-1849 Facsimile
Certificate of Authorization No. 8301

March 6, 2017

Re: RCG File No:

LLV Number: 41421315
VMF Location: 7206700
Subject: 585 Avenue F.D. Roosevelt in San Juan, Puerto Rico
Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was requested to examine the vehicle fire loss involving USPS LLV 7206700 that occurred in San Juan, Puerto Rico on January 12, 2017. In the course of our work, we examined and documented the fire-damaged vehicle on January 23, 2017.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility (VMF) located at 585 Avenue F.D. Roosevelt in San Juan, Puerto Rico. The work to complete this assignment was performed by Fire Consultant Alexander F. Kapczynski, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The area of origin for the fire was determined to be in the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be on the right side of the engine compartment below the level of the air cleaner and the Manifold Absolute Pressure (MAP) sensor, where the main wiring harness was positioned.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of an electrical failure involving the main wiring harness connected to the Exhaust Gas Recirculation Valve (EGR) and the Intake Air Control Valve (IAC).

Observations

Exterior Inspection:

The exterior examination of the vehicle revealed no evidence of soot, smoke, heat or fire damage, with the exception of a small area of discoloration on the hood of the vehicle. The discoloration or heat damage was positioned towards the center of the engine and near the fire wall.

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments revealed no evidence of soot, smoke, heat or fire damage.

Engine Compartment Inspection:

The engine compartment sustained minor damage and the fire appeared to have been extinguished quickly. Fluid levels were observed to be within normal limits. The fuel filter was positioned in the engine compartment on the left side of the engine and towards the firewall. The LLV was equipped with a GM fuel filter system. The fuel filter was intact and free of fire damage. The fuel lines ran along the left side of the vehicle and entered the engine compartment from the rear of the engine. The fuel lines and filter system were not involved in the ignition of the fire.

Upon opening the hood of the fire-damaged vehicle, combustible items were found in the front right corner of the engine compartment, positioned on top of the windshield fluid reservoir. The combustible items were identified as being a crumpled paper bag and cellophane tape. Smoke and soot staining found on the paper bag and cellophane tape indicated that they were present when the fire occurred.

During the inspection, the oil fill cap was missing. The VMF manager stated that he observed the oil fill cap missing when he picked the vehicle up at the loss site.

The greatest fire damage was observed on the right side of the engine compartment below the area of the MAP sensor. The main wiring harness sustained severe fire

damage. The EGR and the IAC attached to the main wiring harness sustained the greatest damage. Plastic insulation covering electrical conductors in the main wiring harness had been mostly consumed by the fire. A large positive conductor found in the area of origin displayed evidence of adverse electrical activity.

A coolant hose positioned near the area of origin displayed a linear hole. It could not be determined during the examination if the linear hole was preexisting or post-fire damage. The Distributor Less System or High Energy Ignition System was observed to be intact and free of fire damage.

Undercarriage Inspection:

The undercarriage examination of the vehicle, revealed no evidence of soot, smoke, heat or fire damage. The involved LLV was mounted on a General Motors (GM) frame.

Fuse Panel Inspection:

Examination of the fuse panel located within the operator's compartment revealed no evidence of soot, smoke, heat, or fire damage. The fuse panel did not have a cover. The fuses were examined and no blown fuses were observed.

Area of Fire Origin:

The area of fire origin was determined to be on the right side of the engine compartment below the level of the air cleaner and the MAP sensor, where the main wiring harness was positioned. The main wiring harness sustained severe fire damage. The EGR and the IAC attached to the main wiring harness sustained the greatest damage.

Contributing Factors:

The fire occurred on January 12, 2017, while the vehicle was making routine deliveries. Earlier that day the carrier reported that the LLV was disabled and would not start. A vendor mechanic, Mr. Luis Perez was sent to the disabled LLV and replaced the battery and the vehicle would still not start. Eventually, the vendor mechanic found a loose connection on the ignition switch and the LLV started and was returned to service. Later that day while the carrier was making deliveries, the LLV was turned off and smoke was observed coming from the engine compartment. When the hood was opened the fire was discovered and a dry chemical extinguisher was used to extinguish the fire.

Evidence Collected:

During the vehicle inspection, several items of evidence were collected from the fire damaged vehicle. The items of evidence were then transferred to our Charlotte, North

Carolina office for further inspection and analysis. The following items were collected during our January 23, 2017, vehicle inspection:

- Exhibit "A"- Remnants of a crumpled paper bag and cellophane tape, found on the front right side of the engine compartment, positioned on top of the windshield fluid reservoir.
- Exhibit "B"- Remnants of main wiring harness removed from the engine compartment.

The collected items will remain in storage for 90 days if the need to conduct a detailed laboratory examination is needed.

Interviews:

Multiple attempts to interview the mail carrier who witnessed the fire were unsuccessful.

Service Records:

A review of the provided service records for the involved LLV was conducted. On June 6, 2016, there were repairs completed with the entry "Won't Start". There was no indication as to what was repaired. There were no other entries that indicated what would have caused or contributed to the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Alexander F. Kapczynski

Alexander F. Kapczynski, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 6, 2017
RCG File No. 41421315

Photograph 1

Front view and left side of LLV 7206700.



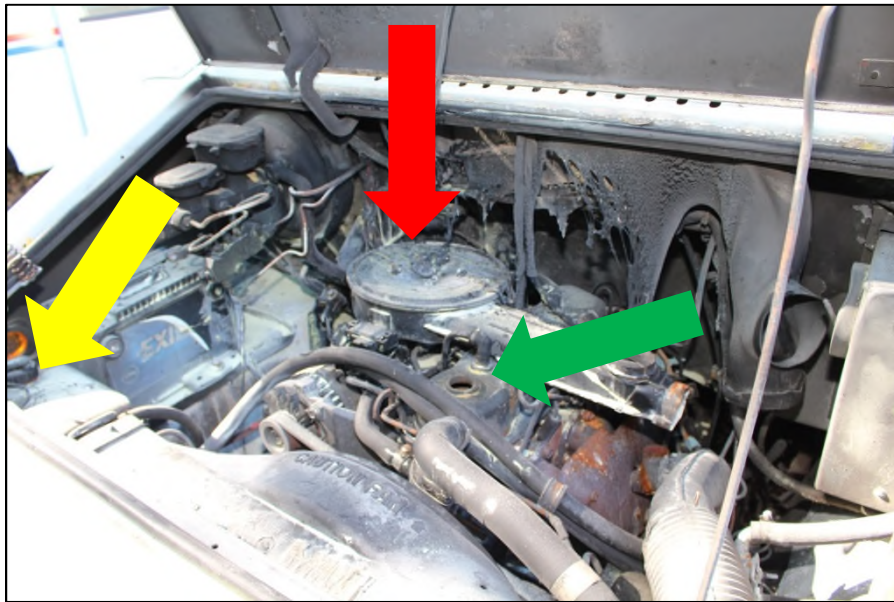
Photograph 2

Discoloration caused by heat damage was observed on the front hood of the LLV.



Photograph 3

View of the engine compartment. Red arrow indicates greatest damage that was observed. Yellow arrow indicates position of crumpled paper bag and tape. Green arrow indicates missing oil fill cap.



Photograph 4

Remnants of a crumpled paper bag and cellophane tape were found in the engine compartment.



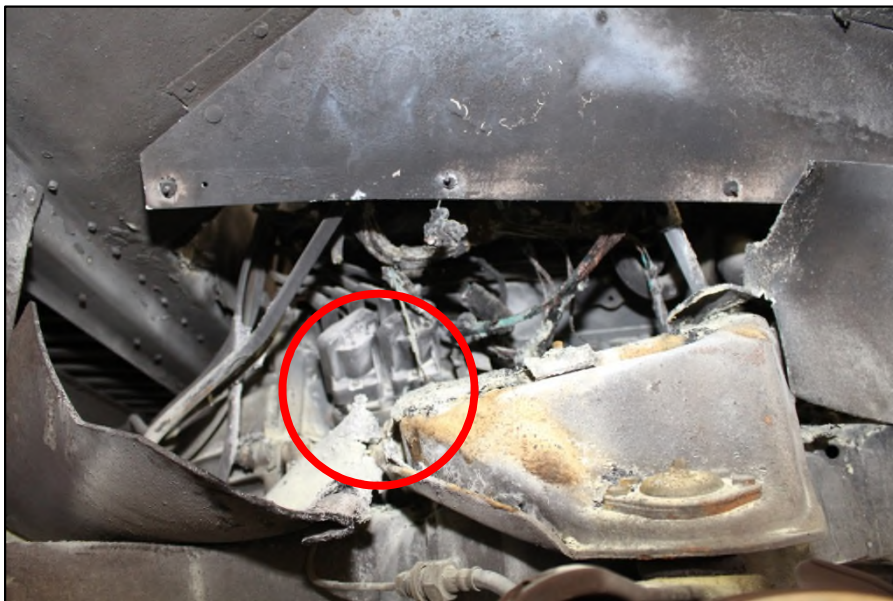
Photograph 5

The fuel filter and fuel lines were found intact and not damaged by the fire. The fuel filter was positioned in the engine compartment.



Photograph 6

The Distributor Less System or High Energy Ignition System was positioned near the area of origin, but was found intact and not damaged by the fire.



Photograph 7

The air cleaner sustained greater damage on the driver's side as compared to the left side.



Photograph 8

We removed the air cleaner to display the fire damage below.



Photograph 9

A close-up view of the damaged main wiring harness.



Photograph 10

The main wiring harness was removed from the engine compartment and examined.



March 6, 2017
RCG File No. 41421315

CVs



**ALEXANDER F. KAPCZYNSKI, IAAI-CFI
FIRE CONSULTANT**

Mr. Kapczynski is a Certified Fire Investigator with the International Association of Arson Investigators (IAAI-CFI), the National Board of Fire Service Professional Qualifications and a New York State Certified Level II Fire Investigator with the New York State Office of Fire Prevention and Control. Mr. Kapczynski is a licensed private investigator in the State of Florida. He served in the City of Albany Fire Department for over twenty one years and was a Lieutenant in the City of Albany's Fire Investigation Unit (FIU) for approximately four years. As a member of the FIU, Mr. Kapczynski investigated and determined the origin and cause involving commercial structures, residential structures and vehicles. Mr. Kapczynski has testified on multiple occasions in criminal proceedings pursuant to his duties as a fire investigator.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

City of Albany Fire Department, Albany, New York
Firefighter Essentials, 1992

Hudson Valley Community College, Troy, New York
Emergency Medical Technician Paramedic Level, 1996

Corning Community College, Corning, New York
Associates Degree, Fire Protection Technology, 1997

New York State Fire Academy, Montour Falls, New York
Hazardous Materials Specialist Training, 1998

New York State Fire Academy, Montour Falls, New York
Fire Behavior & Principles of Fire Investigation, 2007

New York State Fire Academy, Montour Falls, New York
Fire Arson Investigation, 2007

International Association of Arson Investigators, Rutland, Vermont
Advanced Fire Investigation Techniques Seminar, 2008

New York State Fire Academy, Montour Falls, New York
Electrical Cause Determination I & II, 2009

International Association of Arson Investigators, Charlotte, North Carolina
Expert Report Writing, 2010

New York State Fire Investigators & ATF, Colonie, New York
Arc Mapping Seminar, 2010



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
560 SW 12th Avenue
Deerfield Beach, FL 33442
(800) 861-7644 Telephone
(954) 428-1849 Facsimile
Certificate of Authorization No. 8301

July 6, 2016

Re: RCG File No: 41419550
LLV Number: 7206767
VMF Location: 2625 North Airport Road Fort Myers, Florida
Subject: Final Report

Rimkus Consulting Group, Inc. was requested to examine the vehicle fire loss involving USPS LLV 7206767 that occurred at 14651 Ben C. Pratt/6 Mile Cypress Parkway in Fort Myers, Florida on April 15, 2016. In the course of the work, we examined and documented the fire-damaged vehicle on April 28, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 2625 North Airport Road in Fort Myers, Florida. The work to complete this assignment was performed by Fire Consultant Alexander F. Kapczynski, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. An examination of the involved LLV indicated that it had sustained severe fire damage throughout the engine and passenger compartment.
2. The area of origin was determined to be within the engine compartment.
3. The specific area of fire origin within the engine compartment could not be conclusively determined.

4. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the damage in the area of origin, the lack of conclusive physical evidence, and multiple ignition sources that could not be eliminated.

Observations

Exterior Inspection:

The exterior examination of the fire-damaged vehicle commenced from the rear of the LLV and continued in a clockwise rotation. The fire-damaged vehicle was found covered with a large tarp and positioned under a building's overhang. The large tarp was removed and revealed that the vehicle sustained severe fire damage throughout the LLV. Fire patterns indicated that the fire originated within the engine compartment and spread towards the rear of the vehicle. The left side of the vehicle sustained greater damage as compared to the right side or driver's side. The chassis and frame of the vehicle sustained severe damage on the front left side and a large metal section of the chassis had been consumed by the fire.

Interior Inspection:

The interior inspection revealed severe fire damage in the driver's compartment and the cargo compartment.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. The engine compartment sustained severe damage and the fire appeared to have lasted an extended period of time before being extinguished. The remains of the battery were positioned on the right side of the engine compartment. The positive and negative large conductors that had been connected to the battery were present and displayed no evidence of adverse electrical activity. The alternator was positioned on the right, front side of the engine compartment and sustained moderate fire damage. The large positive conductor attached to the alternator was examined and displayed no evidence of adverse electrical activity. A rubber radiator hose positioned below the alternator was intact and sustained minor fire damage. The distributor positioned in the right, rear side of the engine block sustained severe damage.

Fire patterns indicated that the fire originated on or near the left side of the engine block. The fuel filter was positioned on the left side of the engine compartment and in the area where the most damage was observed. The fuel filter was intact, a fuel line that had been attached to the fuel filter was missing or consumed by the fire. The LLV was equipped with a GM fuel filter system.

Undercarriage Inspection:

Due to the severity of fire damage, the fire-damaged vehicle could not be placed onto a lift. The undercarriage was inspected by using a flat-bed tow truck to raise the rear of the vehicle. Fire patterns found along the undercarriage revealed that the fire travel from the front of the vehicle towards the rear. The involved KKV was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel normally positioned in the driver's compartment below the steering column was consumed by the fire and could not be examined.

Area of Fire Origin:

Fire patterns indicated that the fire originated within the engine compartment and spread towards the rear of the vehicle. The path of fire travel appeared to have originated on the left side of the engine compartment and traveled towards the right side of the cargo compartment.

Potential Contributing Factors:

A preventive maintenance inspection was conducted the day before the fire incident. During the preventive maintenance, the oil, oil filter, air filter, PCV filter, wiper blades, and brake pads were replaced. Additional brake work had been completed.

On April 8, 2016, a fuel pump relay was replaced.

Evidence Collected:

After consultation with Technical Fire Manager, Jack R. Kennedy, III, no evidence was collected.

Interview:

Multiple attempts to contact the carrier for an interview were made and were unsuccessful.

Service Records:

A review of the service records for the involved LLV indicated that a PM inspection had been completed on April 14, 2016, at which time the VMF repaired or replaced the oil, oil filter, air filter, PCV filter, wiper blades, and brake pads. Additional brake work had also been completed. Based on the area of fire origin, we cannot eliminate that this work caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Alexander F. Kapczynski

Alexander F. Kapczynski, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

July 6, 2016
RCG File No. 41419550

Photograph 1

View of the left side of LLV 7206767.



Photograph 2

View of the engine compartment and extent of the fire damage.



Photograph 3

The greatest fire damage in the engine compartment was observed on the left side of the engine block.



Photograph 4

The fuel filter was positioned on the left side of the engine compartment and in the area of origin.



July 6, 2016
RCG File No. 41419550

Photograph 5

A section of the fuel line was found to be missing.



Photograph 6

A tow truck was used to examine the undercarriage.



July 6, 2016
RCG File No. 41419550

CVs



**ALEXANDER F. KAPCZYNSKI, IAAI-CFI
FIRE CONSULTANT**

Mr. Kapczynski is a Certified Fire Investigator with the International Association of Arson Investigators (IAAI-CFI), the National Board of Fire Service Professional Qualifications and a New York State Certified Level II Fire Investigator with the New York State Office of Fire Prevention and Control. Mr. Kapczynski is a licensed private investigator in the State of Florida. He served in the City of Albany Fire Department for over twenty one years and was a Lieutenant in the City of Albany's Fire Investigation Unit (FIU) for approximately four years. As a member of the FIU, Mr. Kapczynski investigated and determined the origin and cause involving commercial structures, residential structures and vehicles. Mr. Kapczynski has testified on multiple occasions in criminal proceedings pursuant to his duties as a fire investigator.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

City of Albany Fire Department, Albany, New York
Firefighter Essentials, 1992

Hudson Valley Community College, Troy, New York
Emergency Medical Technician Paramedic Level, 1996

Corning Community College, Corning, New York
Associates Degree, Fire Protection Technology, 1997

New York State Fire Academy, Montour Falls, New York
Hazardous Materials Specialist Training, 1998

New York State Fire Academy, Montour Falls, New York
Fire Behavior & Principles of Fire Investigation, 2007

New York State Fire Academy, Montour Falls, New York
Fire Arson Investigation, 2007

International Association of Arson Investigators, Rutland, Vermont
Advanced Fire Investigation Techniques Seminar, 2008

New York State Fire Academy, Montour Falls, New York
Electrical Cause Determination I & II, 2009

International Association of Arson Investigators, Charlotte, North Carolina
Expert Report Writing, 2010

New York State Fire Investigators & ATF, Colonie, New York
Arc Mapping Seminar, 2010



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
921 Eastwind Drive, Suite 110
Westerville, Ohio 43081
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

January 18, 2019

Re: RCG File No: 53603447
LLV Number: 7206776
VMF Location: 4515 Franklin Avenue Cincinnati, Ohio
Subject: Preliminary/Final Report

Dear

On December 5, 2018 a vehicle fire occurred in a USPS truck at 7350 Montgomery Road, Cincinnati, Ohio. On December 10, 2018 Rimkus Consulting Group, Inc. was retained to examine LLV 7206776 with VIN 1GBBS10E8J2304143.

In the course of our work, we completed an onsite inspection of the vehicle, including photographing the vehicle, arc mapping and witness interviews. Our work to complete this assignment was performed by W. Timothy Spradlin, IAAI-CFI (V). This report was reviewed by David R. Meyers, IAAI-CFI (V), Fire Division Manager.

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the area of the driver's side dashboard area of the vehicle.
2. The specific area of fire origin was determined to be at the terminal connectors on the back of the amp gauge positioned in the right side of the dashboard.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure at the terminal connectors on the back of the amp gauge which created high-resistance heating and ignited surrounding combustible material.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, we observed all of the LLV tires were intact and of the same make and size. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. Both front doors were intact and secure. The cargo door was locked in the closed position. No fire damage was observed to the exterior of the vehicle.

Interior Inspection:

There was slight smoke stain on the interior surfaces of the cab and cargo area. There was fire damage to the right side of the dashboard on the driver side.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5 four-cylinder engine. The engine was fuel injected with four separate fuel injectors. The standard ignition for this engine was a high output ignition coil. There was no fire damage to the engine compartment observed.

The battery for the vehicle was located at the front right side of the engine compartment. The battery, the battery terminals, and battery cables were examined. The battery cables had been disconnected by the fire department; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged.

Fuse Panel Inspection:

The fuse panel was undamaged. A 20 amp fuse labeled "cigar" was observed to be blown.

Area of Fire Origin:

Based on the observed pattern of fire damage and systemic evaluation of the remaining physical evidence, it was determined that the fire originated behind the dashboard on the right side of the driver compartment in the area of the cigarette lighter and amp meter gauge.

Potential Contributing Factors:

We examined the electrical circuits and connectors to the gauges, cigarette lighter port, and toggle switch for the cargo light and hazard flashers. We observed potential electrical activity on one of the terminal connectors on the back of the amp gauge. We could not eliminate an adverse electrical event or high-resistance electrical heating event in the electric circuits in the area of origin.

Evidence Collected:

No evidence was collected.

Witness Statements:

We were unable to interview the carrier driver. We interviewed the VMF manager and the postmaster. They both stated the carrier was loaded, started the truck and was ready to leave the post office when he observed smoke from the right side of the dash. The plastic gauge covers started to melt and small flames were observed. He shut the vehicle off and extinguished the fire with bottled water.

Service Records:

A review of the provided service records for the involved LLV was conducted. There are indications of recent service and repairs that may have caused or contributed to the cause of the fire. On October 19, 2018, the turn signal assemblies were replaced by Advanced Mobile Fleet in Cincinnati, Ohio. On November 1, 2018, the preventive maintenance was completed including an oil change at the Cincinnati VMF. There were indications of recent service and repairs that may have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Timothy Spradlin

Wm. Timothy Spradlin, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

January 18, 2019
RCG File No. 53603447

Photograph 1

No fire damage was observed on the front and driver side.



Photograph 2

No fire damage was observed on the rear and passenger side.



January 18, 2019
RCG File No. 53603447

Photograph 3

No fire damage was observed in the engine compartment.



Photograph 4

No fire damage was observed at the battery.



January 18, 2019
RCG File No. 53603447

Photograph 5

Minor smoke staining was observed in the cargo compartment.



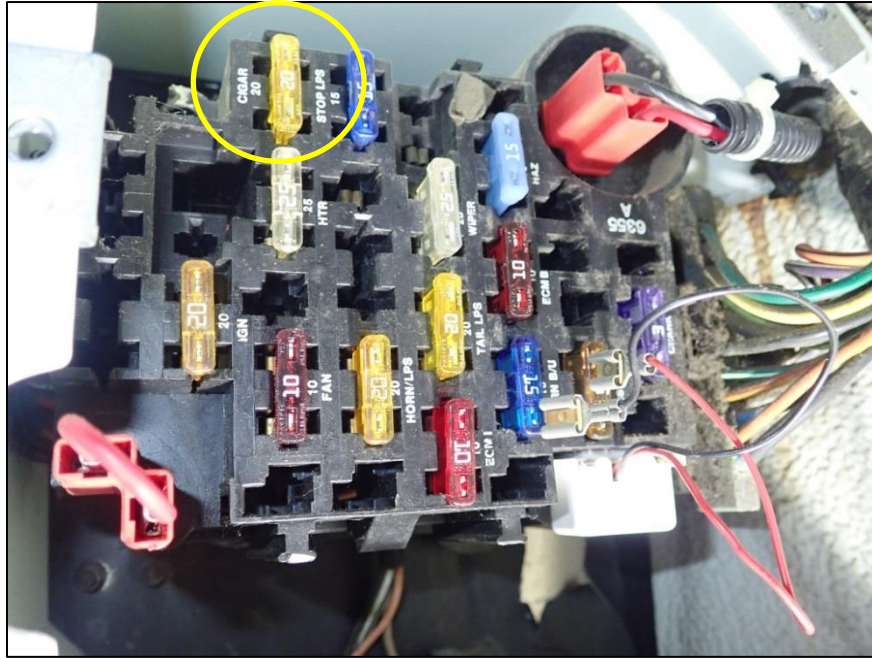
Photograph 6

Fire damaged was observed to the right side dashboard in the driver compartment.



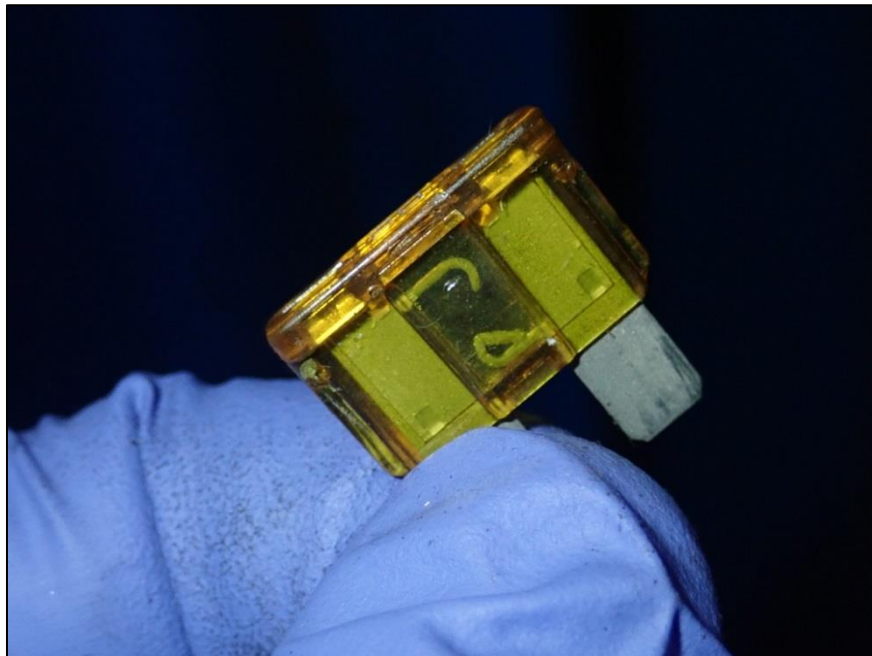
Photograph 7

The fuse panel was undamaged. The 20 amp fuse labeled “cigar” was blown.



Photograph 8

The 20 amp fuse labeled “cigar” was blown.



January 18, 2019
RCG File No. 53603447

Photograph 9

Fire damage observed on metal and plastic dash components outside area of fire origin.



Photograph 10

Fire damage and electrical activity indicators were observed on amp gauge terminals.



January 18, 2019
RCG File No. 53603447

Curriculum Vitae



**WILLIAM TIMOTHY SPRADLIN, IAAI-CFI, CI, FIT, NAFI-CFEI
Fire Consultant**

Mr. Tim Spradlin has over 35 years' experience in firefighting, law enforcement, fire, arson and bombing investigation. His fire / explosion investigation work spans over 20 years of service, and he has three related college degrees. His career includes work as a full-time fire lieutenant, captain, deputy chief and fire chief in Xenia Township, Ohio. Mr. Spradlin also served as a reserve deputy sheriff with the Greene County Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He retired from 32 years public safety work as the Chief of the State of Ohio Fire Marshal's Fire – Explosion Investigation Bureau. From January 2008 until September 2014 Mr. Spradlin was the full-time chief fire / arson investigator for Ohio. He was also the curriculum manager / instructor for the Ohio Fire Academy fire investigation programs.

Mr. Spradlin also served in the United States Air Force, where he served 4 years active duty and 26 years reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant / First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the US Army in 2007 for combat meritorious service.

He currently serves as a police officer in the Village of Yellow Springs and as a volunteer fire training officer with the Xenia Township Fire Department in Ohio. Mr. Spradlin also teaches in the Clark State Community College fire programs and the Sinclair Community College Basic Police Officer Training Academy.

Mr. Spradlin is a certified fire investigator (CFI), fire investigation technician (FIT) and certified instructor (CI) by the International Association of Arson Investigators (IAAI). He is also a certified fire explosion investigator (CFEI) by the National Association of Fire Investigators (NAFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Bachelor of Science Degree in *Organizational Management* from Wilberforce University, Xenia, Ohio
Associates Degree in *Human Resource Management*, Air University CCAF, Gunter AFS, Alabama
Associates Degree in *Fire Science Technology*, Air University CCAF, Gunter AFS, Alabama
National Fire Academy *Arson Interview, Interrogation and Courtroom Testimony* course
National Fire Academy *Executive Analysis of Fire Operations in Emergency Management*
National Fire Academy *Executive Development* Program
National Fire Academy *Executive Planning* Program
Ohio Fire Academy *Basic Fire Investigation* and *Advanced Fire Investigation* programs
USAFR *Senior NCO Leadership Development Course*, Robins AFB, Georgia
Sinclair Community College Criminal Justice Academy, Dayton, Ohio

Member of the International Association of Arson Investigators (IAAI) and of the Ohio Chapter IAAI
Member of the National Association of Fire Investigators (NAFI)
Member of the National Society of Professional Insurance Investigators (NSPII)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
921 Eastwind Drive, Suite 110
Westerville, OH 43081
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

June 29, 2017

Re: RCG File No:

LLV Number: 53602656
7207293
VMF Location: 1770 14th Street in Detroit, Michigan
Subject: Preliminary/Final Report

Dear

On June 13, 2017, a fire occurred involving a US Postal Service vehicle at 353 Queen Anne near Canton, Michigan while the vehicle was being operated.

On June 14, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1987 Chevrolet postal delivery vehicle LLV 7207293, VIN 1GBBS1OE9J2304832. On June 22, 2017 we conducted a fire origin and cause examination on the vehicle at the VMF located at 1770 14th Street in Detroit, Michigan.

In the course of our work, we examined the fire damaged LLV, excavated fire debris, checked all fluid levels, reviewed and copied maintenance records, consulted VMF staff, removed the transmission pan for internal inspection, interviewed the postmaster and the driver, documented the vehicle with photos, obtained and reviewed the local fire department report. Our work to complete this assignment was performed by Fire Consultant W. Timothy Spradlin, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated at the transmission and crossover exhaust pipe under the engine compartment of the involved LLV.
2. The specific point of origin could not be conclusively identified due to the severe fire damage to the area of origin and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire was inconclusive, however, a direct result of ignition of either leaking or atomized engine or transmission fluid coming in direct contact with a hot surface of the components in the area of the transmission and crossover exhaust pipe could not be eliminated.
4. Based on our observations, it is probable that a mechanical failure occurred allowing the loss of transmission fluid. The fluid being ignited by the hot surface of the exhaust pipe could not be eliminated.

Observations

Exterior Inspection:

For the purpose of this report, the left side of the vehicle refers to the mail side and the right side refers to the operator's side. There was severe fire damage to the exterior sides, top, and to the rear of the LLV. The engine hood and components were consumed by the fire. The windows and windshield were dislodged, consumed or broken by the fire.

The wheels and tires on the rear were intact. The wheels and tires on the front of the vehicle were observed with severe fire damage. There was no evidence to indicate that the LLV had recently been involved in a collision. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

The aluminum cab, hood and engine compartment were severely damaged, melted and collapsed from fire exposure. The fender wells were melted and collapsed. The roof was melted and collapsed. Fire damage patterns indicated the fire extended up from the undercarriage below the engine compartment into the cab and engine compartment.

Interior Inspection:

The interior of the LLV was examined. The rear cargo compartment of the interior was observed with severe fire damage that extended from the front of the vehicle into the cargo area. The front compartment was observed with severe fire damage and with

mass loss to the dashboard area. The driver's seat was observed with severe fire damage, oxidation, and mass loss. There was no physical evidence observed on the interior of the LLV that would have caused or contributed to the cause of the fire. Fire damage patterns indicated the fire extended from below the engine compartment into the operators compartment into the rear cargo area.

Engine Compartment Inspection:

Examination of the engine compartment revealed severe fire damage throughout the compartment. The vehicle was equipped with a GM 2.5L, 4 cylinder gasoline engine. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated below the engine compartment. The engine compartment sustained severe fire, heat, and smoke damage throughout. The damage was most severe on the left side of the engine compartment. The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been partially consumed. The melted remains of the fuse box from the passenger compartment and the attached wiring harness were inspected. The wiring harness sustained fire and heat damage. The insulation had been consumed. The alternator sustained severe fire and heat damage. The insulation had been consumed from the conductors to the alternator. The main conductor was secure with no evidence of adverse electrical activity. The auxiliary conductor was secure.

The top of the battery case had sustained severe fire and heat damage. The conductors and terminals had become detached from the battery. The negative conductor was attached to the frame and to the block. The main positive conductor was attached to the starter. The insulation had been consumed but displayed no evidence of adverse electrical activity. The fuel rail was intact, however, had sustained severe fire damage. The injectors sustained heat damage but were intact. The fuel lines had sustained severe fire damage however were intact. The power steering unit positioned at the left front of the engine sustained fire damage. The flexible return line and reservoir had been consumed. The upper radiator hose sustained fire and heat damage. The flexible section of the vapor return line from the fuel tank to the canister mounted in the grill had been consumed. The canister had sustained fire and heat damage. The flexible section from the canister to the solenoid at the rear of the throttle body had been consumed. The starter was observed with external thermal damage only by the fire, and the conductors were damaged but no adverse electrical activity was observed. The insulation had been consumed on the conductors routed across the engine from the battery to the starter.

All combustible engine components including wire insulation, belts, and hoses were consumed by fire. The oil dipstick was checked and the level found to be normal. The transmission dipstick was checked but there was no fluid on it indicating low fluid. There was burned oil residue observed on the tip of the dipstick. The radiator was

severely damaged by heat; therefore the coolant could not be checked. The power steering and brake fluid reservoirs were unable to be examined due to the severe fire damage.

Undercarriage Inspection:

Examination of the rear undercarriage revealed no evidence of soot, smoke, heat or fire damage. The front-end of the undercarriage was observed with severe fire damage. There was an accumulation of oil residue in the area of the transmission and the crossover exhaust pipe. The undercarriage in the area of the engine sustained severe fire damage. There was an accumulation of oil residue present. The involved LLV was mounted on a GM frame. The fuel lines were positioned within the open frame routed to the front of the vehicle. The vehicle was equipped with a GM fuel filter system. The fuel lines were routed above the transmission to the right side of the engine and observed with severe fire damage. The rubber sections of the fuel lines at the transmission were damaged and observed with mass loss. The top of the transmission sustained severe fire damage.

Fuse Panel Inspection:

The fuse panel of the passenger compartment had fallen into the engine compartment and was observed with severe fire damage. Examination of the fuse panel revealed severe fire damage and mass loss to the panel and all of the fuses. Due to the severe fire damage and mass loss, we were not able to determine if any were fuses were blown.

Area of Fire Origin:

Based on examination of the fire damage, it was determined that the area of fire origin was the undercarriage at the transmission and the crossover exhaust pipe below the engine compartment. The specific point of origin could not be conclusively identified due to the severe fire damage to the area of origin and the lack of remaining physical evidence for examination. The specific ignition sequence and cause of the fire was inconclusive, however, it was a direct result of ignition of either leaking or atomized engine or transmission fluid coming in direct contact with a hot surface. The components in the area of the transmission and crossover exhaust pipe could not be eliminated. Based on our observations it is probable that a mechanical failure occurred allowing the loss of transmission fluid. The fluid being ignited by the hot surface of the exhaust pipe could not be eliminated.

Contributing Factors:

We examined the fire damage patterns on the transmission bell housing and lower pan cover, the crossover exhaust pipe, and the adjacent frame. There were heat oxidation

patterns and all oil residues were burned away indicating a possible hot surface fire. The plastic torque converter module on the left side of the transmission and the exhaust vent on the top of the transmission were consumed by fire. The speedometer cable connector coupling at the left rear of the transmission was deformed and fractured by heat. VMF staff removed the lower inspection pan from the transmission; there was only a small amount of transmission fluid remaining in the pan. The internal torque converter wiring and controls were heat damaged. Metal blades and components were attached to the magnet in the pan.

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the undercarriage and engine compartment and the lack of remaining physical evidence for examination. We could not eliminate the possibility of an engine or transmission fluid leak (IE: fuel, oil, transmission fluid) onto a hot surface as the possible cause of the fire.

Evidence Collected:

No evidence was collected.

Service Records:

A review of the service records provided for the involved LLV was completed. The last preventative maintenance was reported to be December 2016. A new frame was installed in 2016. On June 8, 2017, the vehicle was written up for transmission problems by the Canton Post Office staff. On June 12, 2017, the LLV was taken to Eric's Auto Service Center at 28550 Warren Road in Westland, Michigan for repair. The invoice receipt from Eric's indicated the vehicle was evaluated and driven with no problems found. Mr. Battle stated the LLV was returned to service at Canton Post Office on June 13, 2017, and the fire occurred the on the same date.

After a review of the service records, it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Interviews

On June 22, 2017, we conducted an interview at the Livonia VMF with manager. He stated the LLV had a new frame installed in 2016 and had routine maintenance in December 2016. He stated that multiple maintenance issues had occurred with the vehicle over the past year.

On June 22, 2017, we conducted a telephone interview with the USPS driver. He stated that on the date of loss, he was driving the LLV on a

residential route, stopping at street mailboxes. He said he noticed the acceleration was sluggish and the transmission did not seem to be working properly. Mr. stated that as he turned a corner and noticed smoke from under the LLV and he stopped the vehicle. He looked under the LLV and saw flames near the transmission with flames dripping onto the street. He stated he called 911 and his supervisor.

On June 22, 2017, we reviewed the Canton Fire Department incident report for the LLV fire on June 13, 2017. In the report the officer stated there was a trail of fluid on the street behind the LLV, indicating a leak prior to and during the time of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Spradlin

William T. Spradlin, IAAI-CFI, NAFI-CFEI, CVFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

June 29, 2017
RCG File No. 53602656

Photograph 1

Right front fire damage to driver compartment and engine compartment.



Photograph 2

Left front fire damage to driver compartment and engine compartment.



Photograph 3

Fire patterns in area of fire origin undercarriage at transmission pan and exhaust pipes.



Photograph 4

Interior of transmission with pan removed, heat damaged components inside.



Photograph 5

Rear of vehicle with heat damage roller door jammed in position found, would not open.



Photograph 6

Engine compartment fire damage with dashboard mass loss.



June 29, 2017
RCG File No. 53602656

Photograph 7

Driver's side of engine compartment.



Photograph 8

Driver compartment damage, all combustible components consumed by fire.



June 29, 2017
RCG File No. 53602656

Photograph 9
Front undercarriage damage.



Photograph 10
Rear undercarriage and exhaust system intact with fire damage from transmission area.



June 29, 2017
RCG File No. 53602656

CVs



**WILLIAM TIMOTHY SPRADLIN, IAAI-CFI, CI, FIT, NAFI-CFEI
Fire Consultant**

Mr. Tim Spradlin has over 35 years' experience in firefighting, law enforcement, fire, arson and bombing investigation. His fire / explosion investigation work spans over 20 years of service, and he has three related college degrees. His career includes work as a full-time fire lieutenant, captain, deputy chief and fire chief in Xenia Township, Ohio. Mr. Spradlin also served as a reserve deputy sheriff with the Greene County Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He retired from 32 years public safety work as the Chief of the State of Ohio Fire Marshal's Fire – Explosion Investigation Bureau. From January 2008 until September 2014 Mr. Spradlin was the full-time chief fire / arson investigator for Ohio. He was also the curriculum manager / instructor for the Ohio Fire Academy fire investigation programs.

Mr. Spradlin also served in the United States Air Force, where he served 4 years active duty and 26 years reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant / First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the US Army in 2007 for combat meritorious service.

He currently serves as a police officer in the Village of Yellow Springs and as a volunteer fire training officer with the Xenia Township Fire Department in Ohio. Mr. Spradlin also teaches in the Clark State Community College fire programs and the Sinclair Community College Basic Police Officer Training Academy.

Mr. Spradlin is a certified fire investigator (CFI), fire investigation technician (FIT) and certified instructor (CI) by the International Association of Arson Investigators (IAAI). He is also a certified fire explosion investigator (CFEI) by the National Association of Fire Investigators (NAFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Bachelor of Science Degree in *Organizational Management* from Wilberforce University, Xenia, Ohio
Associates Degree in *Human Resource Management*, Air University CCAF, Gunter AFS, Alabama
Associates Degree in *Fire Science Technology*, Air University CCAF, Gunter AFS, Alabama
National Fire Academy *Arson Interview, Interrogation and Courtroom Testimony* course
National Fire Academy *Executive Analysis of Fire Operations in Emergency Management*
National Fire Academy *Executive Development* Program
National Fire Academy *Executive Planning* Program
Ohio Fire Academy *Basic Fire Investigation* and *Advanced Fire Investigation* programs
USAFR *Senior NCO Leadership Development Course*, Robins AFB, Georgia
Sinclair Community College Criminal Justice Academy, Dayton, Ohio

Member of the International Association of Arson Investigators (IAAI) and of the Ohio Chapter IAAI
Member of the National Association of Fire Investigators (NAFI)
Member of the National Society of Professional Insurance Investigators (NSPII)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
5707 South Laburnum Avenue
Richmond, VA 23231
757-229-2226 Telephone
(888) 286-9943 Facsimile

February 15, 2017

Re: RCG File No:

LLV Number: 47602827
VMF Location: 7207516
Subject: 809 Aberdeen Road in Hampton, Virginia
Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 7207516, which reportedly occurred at the post office located at 10660 Page Ave in Fairfax, Virginia, on December 15, 2016, at 3:00 P.M. In the course of the work, we examined and documented the fire-damaged vehicle, and interviewed the carrier/operator on December 27, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 809 Aberdeen Road in Hampton, Virginia on December 29, 2016. The work to complete this assignment was performed by Fire Consultant William R. Clark, IAAI-CFI. This report and file are being reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach, as recommended in the current edition of National Fire Protection Association's NFPA-921, "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the left side of the engine compartment involving the electrical connection for the High Energy Ignition distributor.

3. The specific ignition sequence and cause of the fire was determined to be an electrical failure involving the conductors routed to the HEI. The fire was contained to this area and prevented from spread with the use of an extinguisher.

Observations

Exterior Inspection:

The exterior of the vehicle was examined and found to be intact and free of fire damage.

Interior Inspection:

The interior operator compartment and the mail storage area was examined And found to be intact and free of fire damage.

Engine Compartment Inspection:

The engine compartment of the LLV was examined and determined to be the area of fire origin. There was dry chemical extinguishing agent located on the rear bulkhead on the left side, but no visible fire damage. The fuel filter for this vehicle is located on the left side of the 2.5 liter engine and was a GM fuel filter system. The LLV was equipped with a High Enegy Ignition (HEI) distributor and was determined to be the specific area of fire origin. A failure was observed involving the electrical connections for the HEI.

Undercarriage Inspection:

The undercarriage of the involved LLV was examined and found to be intact and free of fire damage. The involved LLV was mounted on an AM General frame.

Fuse Panel Inspection:

None the fuses in the panel displayed any evidence of a failure.

Area of Fire Origin:

The area or origin was the wiring harness and the HEI which are located on the left lower section of the engine. Access was gained from the front left fender well area. The harness and distributor displayed minor fire damage. The fire occurred in the area of these two components.

Contributing Factors:

Vibration caused chaffing between the wiring harness and the distributor, or the failure of either the wiring harness or the distributor cap.

Evidence Collected:

The wiring harness and distributor cap were collected as evidence and shipped to the Charlotte, North Carolina office on January 4, 2017. The evidence will be held for future laboratory examination if needed.

Interview:

The driver was interview by telephone on December 27, 2016. He stated the following:

- The truck had been parked and when he attempted to start the vehicle, it hesitated, choked and would not start initially. Once it was running, it was rough, and while warming it up he smelled smoke.
- He drove the vehicle to the loading dock which was about 100 yard away. He again smelled smoke.
- He observed smoke coming from the hood and a small amount coming from under the vehicle.
- He released the hood and an employee extinguished the fire.
- He has been driving this vehicle for about six months to a year.

Service Records:

A review of the service records for the involved LLV was conducted. Other than routine PM, there were no indications of service or recent repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William R. Clark

William R. Clark, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

February 15, 2017
RCG File No. 47602827

Photograph 1

View of the front and left sides of the vehicle.



Photograph 2

View of the rear and right side of the vehicle,



February 15, 2017
RCG File No. 47602827

Photograph 3

View of the driver's area.



Photograph 4

View of the fuse panel and under dash.



February 15, 2017
RCG File No. 47602827

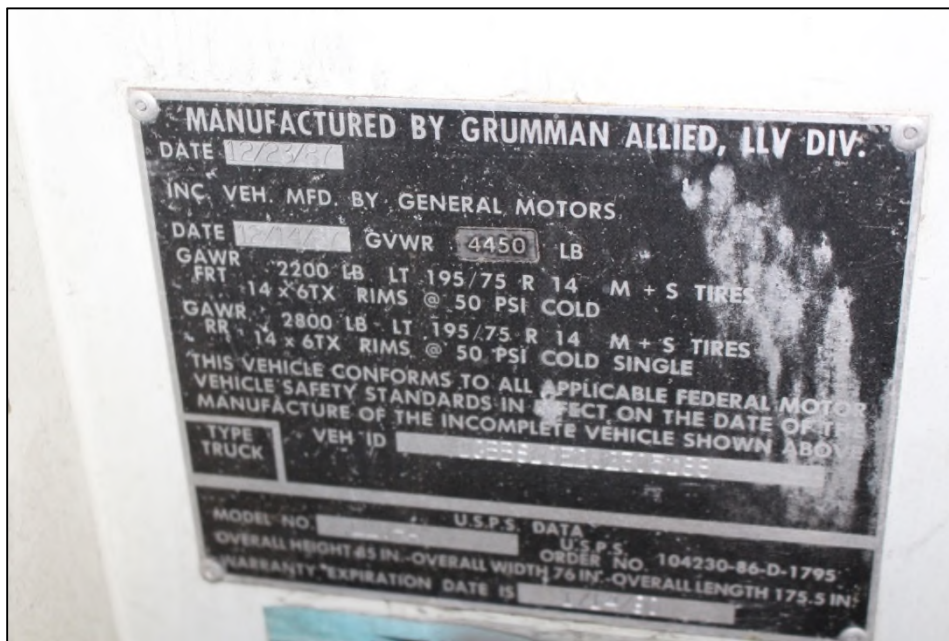
Photograph 5

View of the rear storage area.



Photograph 6

View of VIN plate.



February 15, 2017
RCG File No. 47602827

Photograph 7

View of the engine compartment.



Photograph 8

View of the front of the undercarriage.



February 15, 2017
RCG File No. 47602827

Photograph 9

View of the rear area of the undercarriage.



Photograph 10

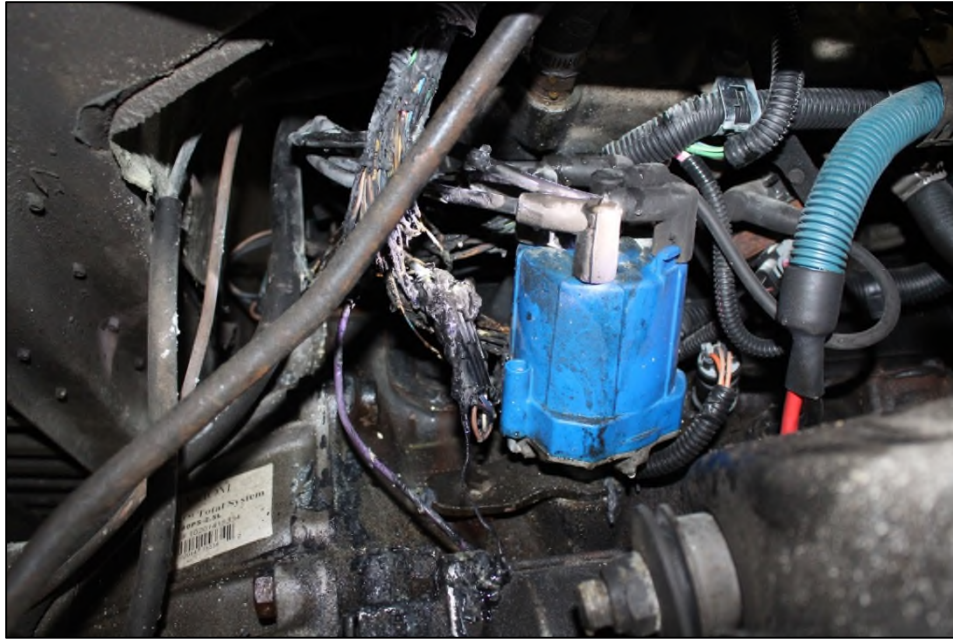
Over view of the area of origin located on the lower left area of the engine.



February 15, 2017
RCG File No. 47602827

Photograph 11

Close up view of the area of origin.



Photograph 12

View of the fire damage to the distributor cap.



Photograph 13

View of the fire damage to the wiring harness.



Photograph 14

View of the wiring harness and distributor cap.



February 15, 2017
RCG File No. 47602827

Photograph 15

View of the area of origin after the wiring harness and the distributor cap have been removed from the vehicle.



February 15, 2017
RCG File No. 47602827

CVs



**William “Bill” Clark, IAAI-CFI, CFEI, CVFI
Fire Consultant**

Mr. Clark is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (VACFI) with the Virginia Department of Fire Programs. Mr. Clark is a Registered Private Investigator with the Virginia Department of Criminal Justice Services.

Mr. Clark has conducted over 900 fire/explosions investigations as a law enforcement officer and private fire investigator. These fire/explosion investigations have involved commercial & residential structures, as well as heavy equipment and vehicles. Mr. Clark has extensive experience investigating fires involving injury and death. Mr. Clark has also conducted investigations involving hazardous materials. Mr. Clark has instructed firefighters, police, and military in fire investigation procedures, death investigations, evidence collection, homemade explosives, and post blast investigations, weapons of mass destruction & clandestine lab recognition and safety.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Tidewater Community College, Virginia Beach, VA
Associates in Fire Science, 12 Credit Hours

Virginia Department of Fire Programs
Firefighter 1, 2, & 3, 1987

Virginia Department of Criminal Justice Academy, Petersburg, VA
Police Academy, 1989

National Fire Academy, Emmetsburg, MD
Fire/Arson Investigation Course, 1996

Virginia Department of Forensic Sciences, Lynchburg, VA
Death Investigation, 2000

Greater Cincinnati Regional Arson and Fire Investigation Association
Fire Investigation, 2003

North Carolina/South Carolina International Association of Arson Investigators Fire Investigation Seminar, 2015

Virginia State Police, Richmond, VA
Vehicle Theft Investigation, 2003

Virginia Chapter of the International Association of Arson Investigators
Electrical Fire Investigation, 2000
Fire Investigation, 2001
Small Appliance Fire Investigation 2001
Fire Investigation, 2003
Fatal Fire Investigation, 2004
Fire Investigation, 2008
Meeting the 1033/921 Challenge, 2013

William “Bill” Clark, IAAI-CFI, CFEI, CVFI

Bureau of Alcohol, Tobacco, Firearms, & Explosives, Richmond, VA
Post Blast Investigation, 2004

Virginia Department of Fire Programs, Norfolk, VA
Environmental Crimes Investigations, 2005
Arson Scene Evidence Processing, 2009

Central Shenandoah Criminal Justice Training Academy, Weyers Cave, VA
Crime Scene Investigations Course, 2005

Central Virginia Criminal Justice Academy, Lynchburg, VA
Reid Interviewing Techniques, 2006
Reid Interview Advanced Techniques, 2007

Public Agency Training Council
Vehicle Fire Investigation Course, 2006
Arson Evidence Collection Course, 2007
Arson for Profit Course, 2009

Federal Emergency Management Agency, Anniston, AL
Hazardous Materials Technician, 2008

Zero Point, Virginia Beach, VA
Advanced Homemade Explosives, 2012

Safety Unlimited
HAZWOPER Training & Certification, 2014

Member of: National Association of Fire Investigators
 International Association of Bomb Technicians & Investigators
 International Association of Arson Investigators
 Virginia Chapter – International Association of Arson Investigators

EMPLOYMENT HISTORY

2014 to Present	Rimkus Consulting Group, Inc.
2006 to 2014	Fire Technology Consultants, LLC (Part Time)
2009 to 2012	Joint Improvised Explosive Device Defeat Organization (MPRI Contractor)
2004 to 2009	Albemarle County Fire Marshal's Office
2003	Donan Engineering Company
2001 to 2006	Danielson Investigative Services (Part Time)
2001 to 2006	Fire Analysis Consulting Group (Part Time)
1998 to 2003	Amherst County Sheriff's Office
1989 to 1998	City of Franklin Police Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
Syracuse City Center, Suite 712
499 South Warren Street
Syracuse, New York 13202
(800) 961-8785 Telephone
(201) 368-8557 Facsimile
Certificate of Authorization No. 0013387

June 3, 2019

Re: RCG File No: 100001811
LLV Number: 8200028
VMF Location: 1200 William Street, Buffalo, New York
Subject: Preliminary/Final Report

Dear

On April 25, 2019, a fire occurred involving a US Postal Service vehicle located at 397 Ludington Street in Buffalo, New York. The fire involved a 1988 Grumman, USPS LLV 8200028 with the Vehicle Identification Number (VIN) 1GBBS10E9J2305446.

Rimkus Consulting Group, Inc. was retained on May 1, 2019, to determine the origin and cause of the fire. In the course of the work, we examined and documented the fire-damaged vehicle with written notes and digital photographs. Our work to complete this assignment was performed on May 6, 2019, by Craig S. Williams, IAAI-CFI, Fire Consultant. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association NFPA 921 – “Guide for Fire and Explosion Investigations” and NFPA 1033 – “Standard for Professional Qualifications for Fire Investigator”.

Conclusions

1. An effective fire pattern analysis and review of the remaining physical evidence concluded that the 1988 Grumman, USPS LLV 8200028 sustained minor fire, smoke, heat, and water damage.

2. The area of origin was determined to have been located within the engine compartment, on the driver's side of the engine.
3. The specific area of origin was determined to have been at the distributor cap of the ignition system, located on the lower portion of the driver's side of the engine.
4. The specific ignition sequence and cause of the fire was determined to have been caused by gasoline leaking from the fuel pressure regulator located on the top of the throttle body. The gasoline that was leaking migrated along and down the surface of several engine components to the exterior surface of the distributor cap. The gasoline collected at the lowest point on the distributor cap, which was also where the cap came in contact with and was fastened to the other ignition components. The gasoline fumes entered the inside of the distributor cap through the seam at that connection point and were ignited by the vehicles ignition system.

Observations

Exterior Inspection:

The exterior examination of the fire-damaged vehicle commenced from the front of the LLV and continued in a clockwise rotation. The exterior inspection revealed that there were no visible signs of fire damage to the exterior of the vehicle.

Interior Inspection:

The interior inspection revealed that there were no visible signs of fire damage to the interior of the vehicle.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil.

No evidence was observed of the fire originating within the brakes, wheel hubs or tires in the area of the engine compartment. The battery was disconnected prior to our inspection and there were no signs of damage to the battery, terminal posts, terminal connector, or conductors. The starter and associated conductors were examined and no damage was found. These were all eliminated as potential causes of the fire.

The throttle linkage cover was found broken and the majority of it was missing from the vehicle. Around that area on the top of the engine and on the insulation of the bulkhead, a white/yellowish residue was found. The residue appeared to be from the

discharge of a dry chemical extinguisher in that area. It could not be determined when and why a fire extinguisher was discharged in this area. Reportedly, no extinguishers were used on April 25, 2019.

The engine compartment sustained minor fire damage. The damage was confined to the driver's side of the engine compartment. The lowest level of fire damage was located on the base of the distributor cap. The distributor cap was located near the base of the engine, on the driver's side, and was directly below the throttle body assembly. The insulation and protective sleeves were partially consumed on several conductors near and above the front side of the distributor cap. There were signs of damage extending from the distributor cap up to the underside of the air cleaner assembly. Inside the air cleaner assembly, there was smoke, heat and fire damage found on the throttle body assembly, air cleaner temperature vacuum valve, and air cleaner.

The fire effects found in the engine compartment were consistent with a gasoline leak originating in the area of the throttle body and the fuel dripping and migrating down to the distributor cap and being ignited.

After examining the fire effects, the fuel pump was isolated and energized to pressurize the fuel system. Upon pressurizing the fuel system, a leak was immediately found at the fuel pressure regulator located on the top of the throttle body assembly. There were no other fuel leaks found in the area of the throttle body. This location was determined to be where the failure occurred that created the gasoline leak which was ignited by the vehicles ignition system.

Undercarriage Inspection:

The undercarriage was inspected and there were no signs of fire damage found. The LLV was mounted on an AM General frame and was undamaged. The AM General frame was installed on the LLV in 2013. The fuel lines on the undercarriage were examined and found intact. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the engine compartment.

Fuse Panel Inspection:

The fuse panel in the driver's compartment to the right side of the steering column was examined and found undamaged by the fire.

Area of Fire Origin:

The area of origin was determined to have been located within the engine compartment, on the driver's side of the engine. The specific area of origin was determined to have been at the distributor cap of the ignition system, located on the lower portion of the driver's side of the engine. Fuel leaking from the fuel pressure regulator located above the distributor cap migrated to this area and was ignited.

Potential Contributing Factors:

One potential contributing factor that was identified during the interviews was that the fuel may have been leaking prior to April 25, 2019, when the vehicle would not start and was towed from the street. Fuel lines were repaired near the gasoline tank at the back of the vehicle on March 12, 2019 by Weco Tire and Auto Sales. There may have been two locations at that time creating the gasoline odor. A repair was made at the back of the vehicle that was believed to have fixed the problem when actually a second leak at the fuel pressure regulator in the throttle body was not discovered.

Evidence Collected:

No items of evidentiary value or artifacts were collected during the vehicle inspection.

Interviews:

The carrier that normally operates the LLV was on vacation the day of the incident. The vehicle was being used by Mr. on April 25, 2019. He was interviewed on May 9, 2019 and stated that when he first started the vehicle in the morning, he had a hard time getting it to start. He stated that in the past, he would have to step on the gas to get it to start. Several times when he would shift it into drive the engine would quit running. The day of the loss the vehicle was parked in front of a business when he was making a delivery. He returned to the vehicle and it would not start. He just heard clicking and the vehicle did not start. He stated that there was an odor which he described as being a "sweet" smell. He was not aware that had been a fire inside the engine compartment and stated that a fire extinguisher was not used that day.

The primary operator of the LLV was interviewed on May 15, 2019. He stated that he had been the primary operator since February of 2018. He was on a two week vacation when the incident occurred. He stated that the vehicle had been good with very few problems. He stated that occasionally, the starter would not engage properly and there would be a grinding noise. Prior to going on vacation, there were several co-workers that stated they would smell gas when he started the vehicle and leave in the morning. He smelled a strong odor of gasoline one day, so he returned the vehicle and stated that he would not drive it until the problem was corrected. The next day the vehicle was not there and he believed that it was being repaired. The following

week, the vehicle was back and he thought everything was repaired. He was unsure exactly what the dates were but it might have been around the time that the repairs were made near the fuel tank. He stated that he was not aware of a fire extinguisher ever being used on the vehicle.

Attempts were made to contact Mr. and Mr. by phone to conduct interviews. Voice messages were left and no return phone calls were received at the time of this report.

Service Records:

Based upon our review of the vehicle's maintenance records, on March 12, 2019, the LLV had repair work done on the fuel lines at Weco Tire and Auto Sales, 397 Ludington Street, Buffalo, New York. The repairs that were completed that day were allegedly all near the rear of the vehicle. The last regular preventative maintenance was performed on January 7, 2019 and there was no documentation of any fuel leaks around the throttle body assembly. It does not appear that the maintenance that was performed on this vehicle was a contributing factor to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Craig S. Williams

Craig S. Williams, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

June 3, 2019
RCG File No. 100001811

Photograph 1
Front of the vehicle.



Photograph 2
Driver's side of the vehicle.



June 3, 2019
RCG File No. 100001811

Photograph 3
Rear of the vehicle.



Photograph 4
Mail side of the vehicle.



June 3, 2019
RCG File No. 100001811

Photograph 5
Driver's compartment.

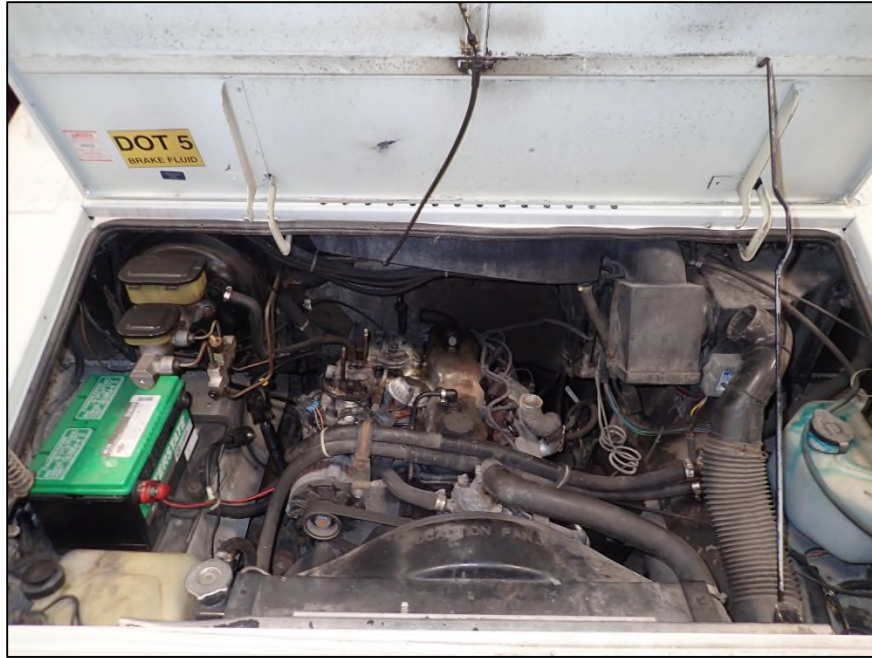


Photograph 6
Cargo area.



June 3, 2019
RCG File No. 100001811

Photograph 7
Engine compartment.



Photograph 8
Undercarriage near the front of the vehicle.



June 3, 2019
RCG File No. 100001811

Photograph 9

Undercarriage in the middle of the vehicle.



Photograph 10

Undercarriage in the rear of the vehicle.

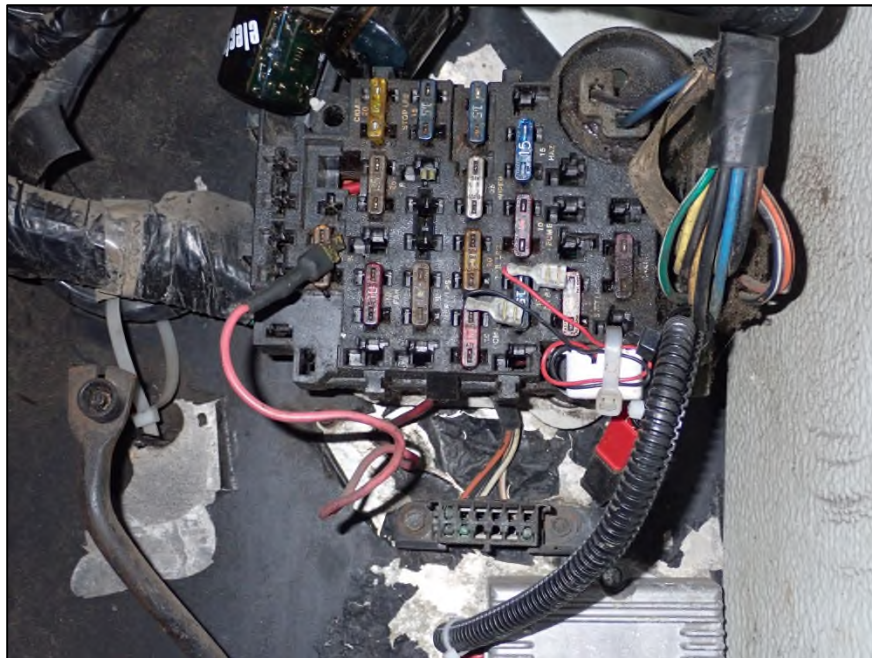


June 3, 2019
RCG File No. 100001811

Photograph 11
Dashboard of the vehicle.



Photograph 12
Vehicles fuse panel.



June 3, 2019
RCG File No. 100001811

Photograph 13

Battery in the engine compartment.



Photograph 14

Distributor cap on the driver's side of the engine.



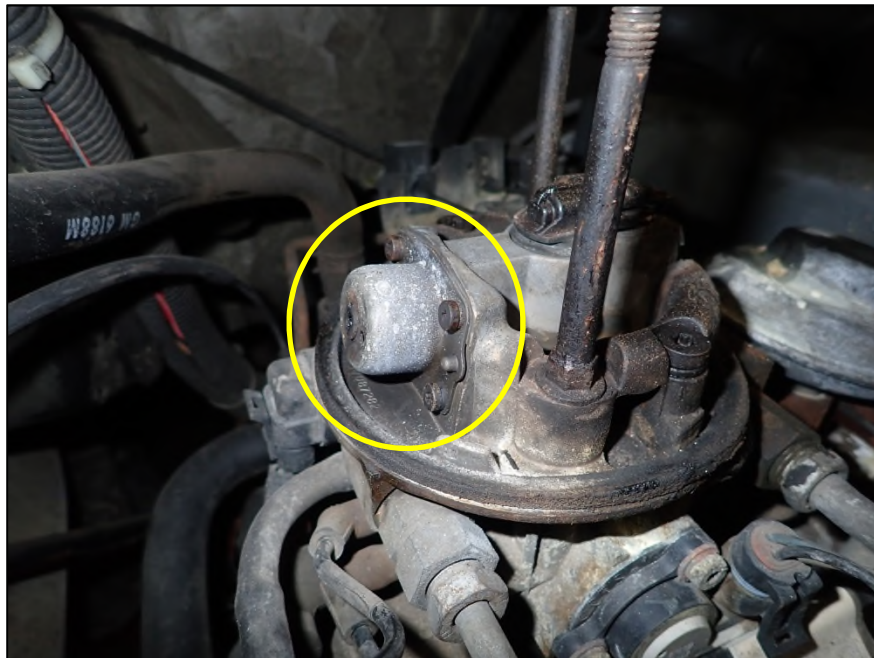
Photograph 15

Close-up view of the damage to the distributor cap.



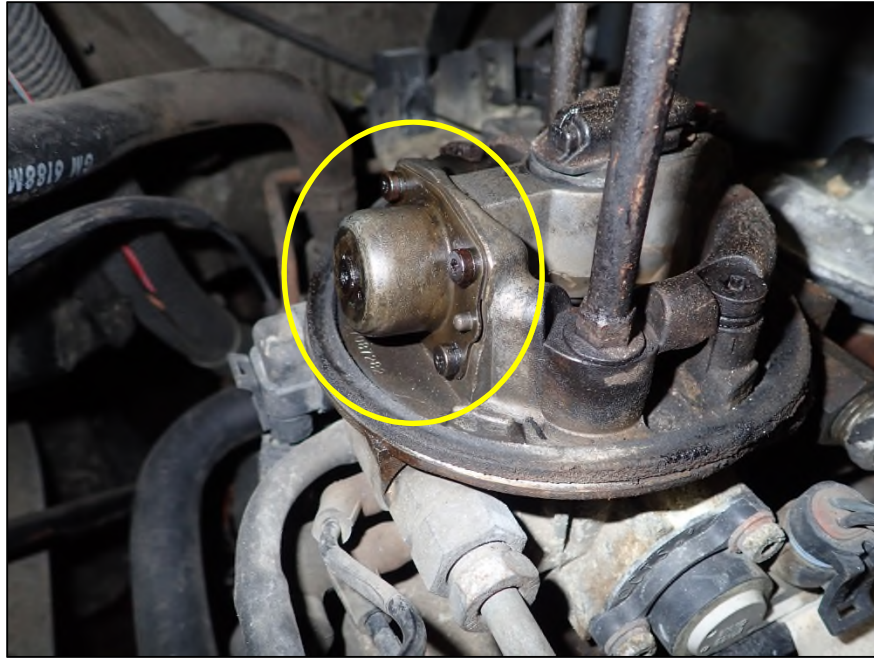
Photograph 16

Fuel pressure regulator surface was dry prior to pressurizing the fuel system.



Photograph 17

Fuel pressure regulator covered with gasoline once the system was pressurized.



Photograph 18

Fuel pressure regulator covered with gasoline once the system was pressurized.



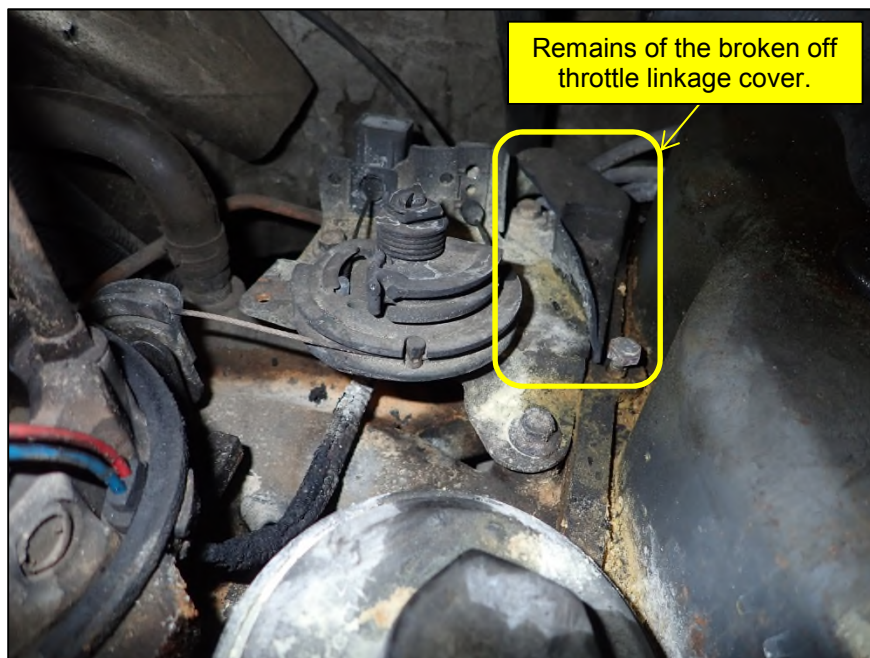
Photograph 19

Dry chemical extinguisher remains on the insulation attached to the bulkhead.



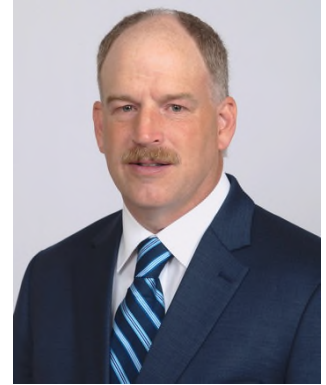
Photograph 20

Extinguisher remains on the engine and the remains of a broken throttle linkage cover.



June 3, 2019
RCG File No. 100001811

Curriculum Vitae



Craig S. Williams, CFI, CFEI

Fire Consultant
Fire Division

Background

Mr. Williams is a seasoned specialist in fire, arson, and explosion investigations and also is a licensed private investigator in multiple states. His specific area of expertise is origin and cause fire investigations of residential, commercial, and industrial structures, vehicles, and heavy construction equipment. Other areas of forensic experience include marine fire investigations, large-loss fire investigations, explosion and arson fire investigations, electrical fires, and evidence collection.

Over the last three decades, Mr. Williams acquired his extensive knowledge of the fire service through various roles: Firefighter, Lieutenant, Captain, Interim Fire Chief, Municipal Training Officer, Fire Investigator, and Fire Investigator Team Leader. While serving in the capacity of Municipal Training Officer, he coordinated and instructed several New York State Office of Fire Prevention and Control courses for the City of Batavia Fire Department. These courses covered all aspects of the fire service, including fire investigation.

Mr. Williams has obtained several state, national, and international certifications, including: Certified Fire Investigator (CFI) with the International Association of Arson Investigators (IAAI); Certified Fire and Explosion Investigator (CFEI) with the National Association of Fire Investigators (NAFI); New York State Fire Investigator (Levels I and II); and Certified Fire Investigator (CFI) with the National Board of Fire Service Professional Qualifications (National Pro-Board). He has also completed numerous educational seminars and continuing education courses in the field of fire investigation.

Mr. Williams also spent the early part of his career as an owner/operator of a construction company.

Contact Information

(800) 961-8785

cswilliams@rimkus.com

Syracuse City Center
Suite 712
499 South Warren Street
Syracuse, NY 13202



Rimkus Consulting Group, Inc.
1752 W 1180 S, Suite 8
Woods Cross, Utah 84087
(855) 249-6568 Telephone
(385) 202-2633 Facsimile

September 28, 2018

Re: RCG File No: 76400684
LLV Number: 8200161
VMF Location: 10108 Redwood Road Salt Lake City, Utah
Subject: Preliminary/Final Report

Dear

A fire reportedly occurred on September 5, 2018, involving a 1988 Chevrolet LLV located at the Logan Utah Post Office at 75 W. 200 North Logan, Utah. The LLV last was operated by Mr.

Rimkus Consulting Group, Inc. was retained to examine LLV 820016, VIN 1GBBS1OE1J2305487 at the VMF located at 10108 Redwood Road Salt Lake City, Utah. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on September 13, 2018. This LLV was manufactured by General Motors in 1988. The vehicle examination was conducted by Fire Consultant Dean B. Hunt, NAFI – CFEI. This report was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

In the course of our work, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the area of the electric fuse panel of the vehicle.
2. The specific area of origin could not be conclusively determined at the time of our examination due to the severe fire damage to both the operators' and engine compartments and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the vehicle and the lack of remaining physical evidence for examination.

Observations

Exterior Inspection:

There was no damage to most of the cargo area of the LLV with the exception of the area where the driver's door met the cargo area. This damage was along the edge of the cargo area and tapered towards the rear near the roof. The driver's door was damaged from the fire. The glass was melted out and part of the window frame in the door was melted. The mail side of the driver's compartment was damaged from the fire along the front edge of the door. This damage tapered upwards and towards the rear of the LLV. The front fender of the mail side had mostly been consumed by the fire. The front grille was damaged from the fire. The left headlight had been consumed by the fire. The driver's side fender was damaged from the fire. The top half of the fender nearest to the windshield had been consumed by the fire. The hood over the engine compartment had been consumed by the fire. The front right tire and the 2 rear tires were still intact and not damaged from the fire. The front left tire had been consumed by the fire. The front half of the roof over the driver's compartment had been consumed by the fire.

Interior Inspection:

The interior of the driver's compartment had been damaged by the fire. All of the combustible materials had been consumed by the fire. The firewall between the interior and the engine compartment had been consumed by the fire. The steering wheel and steering column was lying on the floor of the LLV. The part of the fire wall that the steering column had been mounted to was consumed by the fire.

The cargo area was damaged by the fire. This damage was less severe at the rear of this area and progressively increased towards the front of the area.

Engine Compartment Inspection:

The engine compartment had been damaged by the fire throughout. The front left tire had been consumed by the fire. The aluminum body and engine parts on the mail side surrounding the left tire had been consumed by the fire. This damage was more severe directly around the tire. This damage retrogressed away from the tire. This is consistent with these aluminum components being directly impinged upon by the flame from the tire. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was equipped with a fuel injected system. The vehicle had a standard ignition coil.

The firewall between the engine compartment and the driver's compartment had been consumed by the fire. This damage was across the entire width of the LLV. This damage progressed more severely from the mail side to the driver's side.

Undercarriage Inspection:

There was no damage from the fire to the undercarriage. There was no indication of any major fluid leaks from the engine, transmission or the differential in the undercarriage. The LLV was mounted on a GM general frame and was undamaged.

Fuse Panel Inspection:

The fuse panel had been consumed by the fire. The connector end of one of the electrical conductors that had been connected to the fuse panel was melted. All other connector ends were not damaged to this extent from the fire. The insulation to all of the electrical conductors that had been connected to the fuse panel had been consumed by the fire.

Area of Fire Origin:

The area of fire origin was the area of the electric fuse panel. The fuse panel had been consumed by the fire. The firewall where the fuse panel had been mounted had been consumed by the fire. The firewall at this area was melted down farther than any other part of the firewall.

Potential Contributing Factors:

The time lapse between the time that the LLV was last used and the time of the last vehicle check (3 hours) to the time that the fire was reported (another 3 hours, 6 hours total time lapse). A fuel caused fire was eliminated. The LLV had been parked at approximately 3:00 P.M. A vehicle check was conducted at 7:00 P.M. and no problems were reported at that time. The VOMA was notified of the fire at 10:11 P.M.

The extent of damage and the amount of consumed aluminum body and engine parts indicated that this fire burned a significant amount of time before being extinguished.

The degree of which the fuse panel was consumed by the fire and the electrical connector melted that had been connected to the fuse panel, the fire caused by an electrical event at or in the electric fuse panel could not be eliminated. The LLV was parked in a secure location at the Logan, Utah Post Office eliminating an incendiary cause.

Evidence Collected:

No evidence was collected.

Witness Statement:

The VMF Manager, stated that while the LLV was parked at the post office, the fire was discovered. It was last used at approximately 3:00 P.M. The fire was discovered at approximately 10:00 P.M.

Service Records:

After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. The last preventive measure was completed on July 6, 2018. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Dean B. Hunt

Dean B. Hunt, NAFI - CFEI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

September 28, 2018
RCG File No. 76400684

Photograph 1
Front and mail side of LLV.



Photograph 2
Driver's side.



Photograph 3

Melted connector end of electrical conductor from fuse panel.



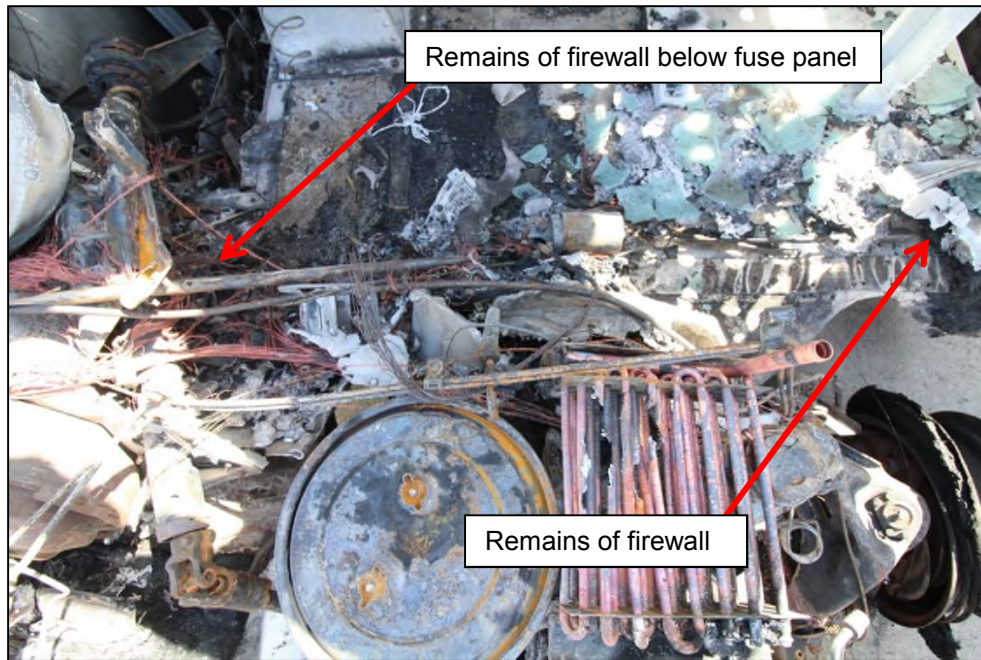
Photograph 4

Multiple electrical conductors from fuse panel. One with melted connector circled.



Photograph 5

Location of fuse panel and melted firewall.



Photograph 6

Undercarriage.



September 28, 2018
RCG File No. 76400684

Curriculum Vitae



DEAN B. HUNT C.F.E.I. FIRE CONSULTANT

Mr. Hunt is a graduate from Grand Canyon University with a Bachelor of Science degree in Public Safety and Emergency Management. His experience and knowledge covers over 30 years in the fire service with the last 19 years working as a full time Fire Investigator and Fire Marshal. He is a Certified Fire and Explosion Investigator (C.F.E.I.) through the National Association of Fire Investigators as well as a Certified Fire Inspector II with the International Code Council (ICC). Mr. Hunt is experienced in the interpretation and enforcement of the International Building Code and the International Fire Code as it relates to fire, life safety and egress in existing buildings and new construction as well as with fire protection systems.

In addition to over 600 fire investigations, Mr. Hunt has conducted over 200 live fire training tests utilizing modern furnishings and materials. These tests were conducted for the purpose of studying the effects of varying structural and atmospheric conditions as well as the effects of fire protection systems. This has helped him to gain a better understanding of how these varying conditions affect the growth and progression of fire as well as the patterns that are left behind after a fire has been extinguished.

Mr. Hunt has extensive experience in public speaking as well as presenting at both national and local conferences including the National Fire Protection Association (NFPA) Conferences and Vision 20/20 Symposium of Model Programs of Fire Prevention. He has also been recognized for his Fire Prevention Programs in National Fire Academy publications and courses as a 'model program' in Fire Prevention.

Mr. Hunt has been involved in photography both as a hobby and professionally for 40+ years. This experience has given him experience with both modern and past photography equipment and techniques.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. Public Safety and Emergency Management – Grand Canyon University, Phoenix Arizona
Certified Fire and Explosion Investigator – National Association of Fire Investigators (NAFI)
Certified Fire Inspector II – International Code Council (ICC)
International Association of Arson Investigators, Utah Chapter – Member
National Association of Fire Investigators – Member
International Association Fire Chiefs – Member
International Fire Marshals Association – Member
Utah Fire Chiefs Association – Member
Fire Marshals Association of Utah – Member

EMPLOYMENT HISTORY

2016 – Present	Rimkus Consulting Group, Inc.
1997 – 2016	Layton City Fire Department
1994 – 1997	Utah Office of the State Fire Marshal
1989 – 1994	Utah Bureau of Emergency Medical Services



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
5099 Commercial Circle, Suite 100
Concord, California 94520
(925) 677-7439 Telephone
(925) 677-7445 Facsimile

December 19, 2017

Re: RCG File No: 01906505
LLV Number: 8201223
VMF Location: 1630 S. Delaware Street San Mateo, California
Subject: Preliminary/Final Report

On November 17, 2017, a fire occurred involving USPS LLV 8201223. The loss location was reported as 251 Oakhurst Place in Menlo Park, California. LLV 8201223 was examined at the VMF located at 1630 S. Delaware Street in San Mateo, California.

Rimkus Consulting Group, Inc. was retained to examine the 1988 Chevrolet LLV 8201223, to determine the cause of the fire. During our investigation, we conducted an examination of the fire damaged LLV, reviewed the written statement of carrier/driver, and documented the vehicle with photographs. In the course of our work, the vehicle examination was conducted by Fire Consultant Jimmie McCants NAFI - CFEI, on November 30, 2017. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator's compartment of the involved LLV.

2. The specific area of fire origin was determined to be at the rheostat headlamp switch positioned in the left side of the dashboard.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch which heated and ignited surrounding combustible material.

Discussion

Exterior Inspection:

Examination of the vehicle began at the front of the vehicle and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. There was no evidence to indicate that the LLV had recently been involved in a collision. The vehicle sustained no visible exterior fire damage.

Interior Inspection:

The operator compartment sustained a moderate amount of interior fire damage; the damage was primarily to the dashboard area and bulkhead for the engine compartment.

There was minimal fire damage to the cargo area.

Steering Column Inspection:

The steering column was still in the LLV but was severely damaged by the fire.

Engine Compartment Inspection:

The engine compartment sustained a moderate amount of fire damage from the bulkhead, or fire wall, failing and the fire starting to spread into the engine compartment from the cab area. The fuel system was examined and found to be intact and observed with no fire damage. The battery for the vehicle was located at the front right side of the engine compartment and had no fire damage. The engine compartment was eliminated as an origin of the fire. The LLV was equipped with a 2.5L, four-cylinder gas engine.

Undercarriage Inspection:

Examination of the undercarriage revealed no evidence of fire damage along the bottom side of the engine as well as the sides of the engine. The involved LLV was mounted on a GM frame. The fuel lines were examined and they were intact and undamaged. The fuel tank was examined and the vehicle fuel filter system was equipped with a GM filter. Both were free of fire damage. The exhaust system was intact and the transmission did not reveal any leaks. The vehicle sustained no visible undercarriage fire damage.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage and was consumed. The fire damage observed was a result of the fuse panel being exposed to the fire.

Area of Fire Origin:

Based on the observed patterns of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the dashboard area of the LLV. We were able to recover the headlight switch and other toggle switches for further examination. It is believed from the damage to the headlight switch that this was the failure point for the origin.

Contributing Factors:

Issues with the headlamp switch in the area of origin could not be eliminated. The involved components were collected and sent to Technical Fire Manager David R. Meyers, IAAI-CFI in the Charlotte, North Carolina office for analysis. An examination of the artifacts was conducted by Mr. Mark H. Nelson, P.E. The rheostat headlight switch could not be eliminated as a cause of the fire.

Evidence Collected:

We collected the headlight and other toggle switches and sent to the Charlotte office for examination.

Interviews:

After multiple attempts to contact the carrier, we were unable to interview the carrier. The carrier's written statement was reviewed.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were several repairs done to that LLV in the months prior to the fire. After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. However, based on this information, maintenance performed on the vehicle may not have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jimmie L. McCants II

Jimmie L. McCants II, NAFI - CFEI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

December 19, 2017
RCG File No. 01906505

Photograph 1
Rear of LLV.



Photograph 2
Front of LLV.



December 19, 2017
RCG File No. 01906505

Photograph 3
Dash area.



Photograph 4
Engine compartment .



December 19, 2017
RCG File No. 01906505

Photograph 5

Fire damage to dashboard area.



Photograph 6

Remains of the headlight switch harness.



December 19, 2017
RCG File No. 01906505

CVs



**JIMMIE McCANTS, IAAI, CFEI
FIRE CONSULTANT**

Mr. McCants is a Certified Fire and Explosion Investigator and a licensed private investigator in California. With 22 years of fire investigation experience and 26 years of law enforcement experience he is uniquely qualified to work the most complex fire losses. He has investigated over 1,000 fires during his long career. He was assigned as a lead investigator for a multi-county fire investigation unit in California. Mr. McCants has investigated several fatal fires as well as numerous high profile fires and bombing incidents throughout northern California. He is well versed in taking statements and in the warning signs of arson and possible insurance fraud cases.

As a prior detective Mr. McCants is well versed in collecting and preserving evidence. His structural fire and explosion experience on scene for various types of occupancies has given him working knowledge of building construction, fire behavior, and post investigation techniques for analyzing damage assessment and fire cause and origin.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire and Explosion Investigator, National Association of Fire Investigators 2012
Certified Arson / Explosive Investigator, Robert Pressley Institute of Criminal Investigations 1999
Associates of Sciences degree Solano Community College, 2000

EMPLOYMENT HISTORY

2013 – Present	Rimkus Consulting Group, Inc.
2011 – 2013	G4S Compliance and Investigations, part-time fire investigator
1985 – 2011	Solano County Sheriff's Office



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
119 Marketridge Drive, Suite H
Ridgeland, MS 39157
(877) 774-6587 Telephone
(601) 853-8303 Facsimile
Certificate of Authorization No. 00001307

January 26, 2016

Re: RCG File No: 52205966
LLV Number 8201272
VMF Location: 12390 Texas Avenue in Shreveport, Louisiana
Subject: Final Report

On November 14, 2015, a fire involving USPS LLV 8201272 occurred. At the time of the fire, the vehicle was located at 9300 Dean Road in Shreveport, Louisiana. On November 17, 2015, Rimkus Consulting Group, Inc. was retained to determine the origin and cause of the fire.

Our inspection of the vehicle occurred on November 19, 2015, at the USPS Vehicle Maintenance Facility (VMF) in Shreveport, Louisiana. In the course of our work we inspected and photographed the vehicle, reviewed maintenance and repair records, and completed witness interviews. The work to complete this assignment was performed by Mr. W. Andrew Asbell, IAAI-CFI, District Manager/Fire Consultant. A technical review of this file was completed by Mr. Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association 921 – “Guide for Fire & Explosion Investigations”.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the left rear of the engine in the area of the exhaust manifold.
3. The specific ignition sequence and cause of the fire was a direct result of vapors produced from heated engine oil that was displaced from the rear portion of the valve cover being ignited by the heat surface of the exhaust manifold. The engine oil came into contact with the exhaust manifold as a result of a leak from the valve cover.

Observations

Exterior Inspection:

An exterior examination of the LLV originated at the front and continued in a counter-clockwise direction. Exterior fire damage was confined to the front portion of the LLV and in proximity to the engine compartment. Exterior fire damage was observed along the hood and the right and left front fenders. The exterior portion of the windshield displayed soot and smoke damage and was cracked in numerous areas due to radiant heat and fire exposure.

Interior Inspection:

An interior examination of the LLV revealed no physical evidence of fire damage within the rear cargo compartment. Minor smoke and thermal damage was observed along the lower portion of the dash and in proximity to the left side of the LLV. Fire patterns revealed that the heat communicated outward from the left side of the bulkhead and inward along the lower portion of the dash.

Engine Compartment Inspection:

The engine compartment was examined. The 2.5 liter engine was manufactured by General Motors. Fire damage and mass loss was observed along the upper portion and the left rear portion of the engine compartment. The most severe area of fire damage and mass loss was located in proximity to the exhaust manifold and the bulkhead. Fire patterns communicated upward and outward from the left rear corner of the engine.

At the time of the fire, there was a single 12-volt battery mounted along the right front corner of the engine compartment. The battery displayed minor fire damage and mass loss along the upper portions. The 12-volt battery was connected to the LLV via side mount terminals. Fire damage was observed to the battery conductors, and the listed

conductors had been severed. The severed battery conductors were the result of actions completed by fire suppression personnel to de-energize the LLV. No physical evidence of adverse electrical activity was observed to the battery conductors.

As a result of the fire, numerous electrical conductors and harnesses were damaged along the left rear corner of the engine compartment. Adverse electrical activity was observed along several small conductors located directly above the area of fire origin. In our opinion, the observed physical evidence of adverse electrical activity was a result of the fire communicating upward from the topside of the exhaust manifold and impinging on the listed conductor's plastic insulation.

The brake master cylinder and brake fluid reservoir were located along the right rear corner of the engine compartment. The brake lines appeared to be intact and minor fire damage was observed to the lines. The upper portions of the brake master cylinder and the brake fluid reservoir displayed fire damage.

The alternator was located along the right front portion of the engine. No physical evidence of adverse electrical activity was observed to the alternator. As a result of the fire, the belt connected to the front pulley of the alternator had been severed and had fallen downward into the engine compartment.

The GM fuel filter was located along the left front corner of the engine. The fuel lines that were connected to the fuel filter were routed from the left side of the engine and downward toward the frame rail. As a result of the fire, the flexible sections of the fuel lines had been consumed and the fuel lines were not intact along the front upper portion of the engine.

Undercarriage Inspection:

The undercarriage of the LLV was inspected. Minor fire damage was observed along the front left side of the engine compartment. Physical evidence of fluid leaks were observed in and along the rear of the engine and transmission housing. The frame for the involved LLV was an AM General style frame.

Fuse Panel Inspection:

The fuse panel was located along the right side of the dash and in proximity to the steering column and control pedals. No physical evidence of fire damage or adverse electrical activity was observed to the fuse panel.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated along the left rear corner of the engine, and in proximity to the topside of the exhaust manifold. The material first ignited was vapors produced by heated engine oil. The ignition source of the fire was heat generated from the operational engine's exhaust manifold. The specific ignition sequence and cause of the fire was a direct result of vapors produced from heated engine oil that was displaced from the rear portion of the valve cover being ignited by the heat surface of the exhaust manifold.

Contributing Factors:

An engine oil leak was observed from the valve cover.

Evidence Collected:

No physical evidence was collected for further inspection or laboratory analysis.

Interview:

At the time of the fire, the LLV was being operated. The carrier reported that the involved LLV was not the normal LLV that she operated. On the date of the fire, she smelled an unusual odor emitting from the engine and had decided to drive the LLV back to the post office to be exchanged. Shortly thereafter, she observed smoke and flames emitting from the rear center portion of the engine compartment. She pulled over along the shoulder of the road and called 911 to report the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

W. Andrew Asbell

W. Andrew Asbell, IAAI-CFI
District Manager/Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

January 26, 2016
RCG File No. 52205966

Photograph 1
Front view.



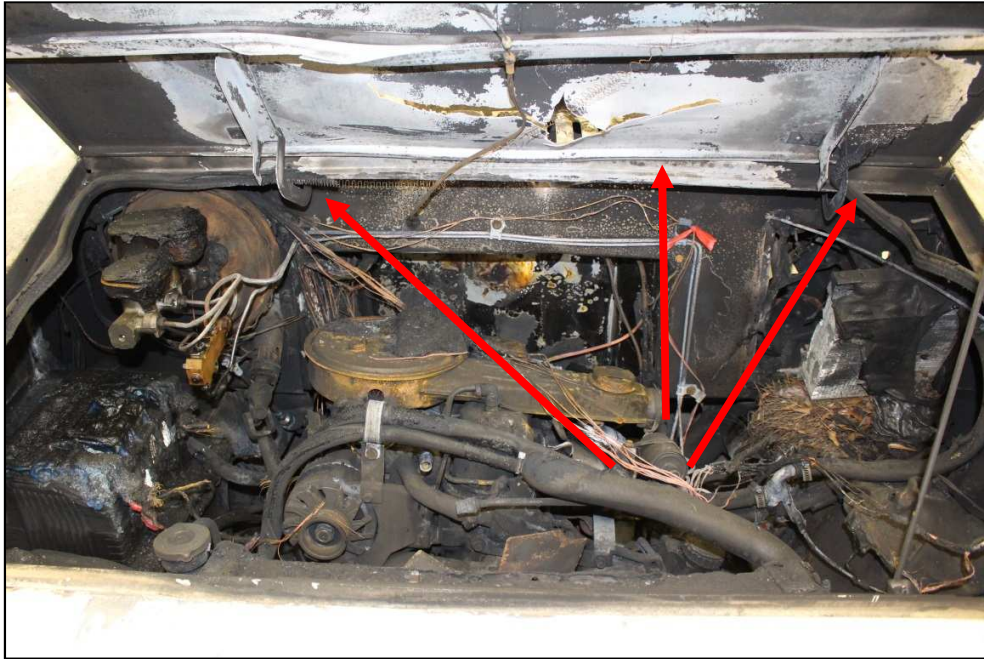
Photograph 2
Undercarriage view of front portion.



January 26, 2016
RCG File No. 52205966

Photograph 3

The fire originated along the left rear corner of the engine and communicated upward and outward as outline by the red arrows.



Photograph 4

An additional view of the area of fire origin. The red flag tape outlines an area of electrical activity that was utilized during arc fault mapping.



January 26, 2016
RCG File No. 52205966

Photograph 5

View of the area of fire origin.



Photograph 6

A closer view of the area of fire origin.



January 26, 2016
RCG File No. 52205966

CV



**W. ANDREW ASBELL, IAAI-CFI, CFEI, CVFI
District Manager/Fire Consultant**

Mr. Asbell is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI), and a Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators. He served as a Fire Investigator with the City of Charlotte, NC Fire Department, the City of Norfolk, VA Fire-Rescue, and as a private fire investigator where he investigated and determined the origin and cause of more than 1,100 fires and explosions to include industrial facilities, commercial and residential structures, passenger vehicles, heavy equipment, and fire-related fatalities. Mr. Asbell has completed numerous educational seminars and continuing education courses in the field of fire investigation and fire code enforcement. Mr. Asbell has testified and been qualified as an expert witness in court proceedings pertaining to fire origin and causation.

Mr. Asbell has coordinated and instructed continuing educational training programs involving the investigation of fires to public fire and police officials, insurance adjusters and investigators, and attorneys. This includes live fire training involving structures and vehicles.

In addition to his fire investigation experience, Mr. Asbell served as a firefighter, law enforcement officer, Emergency Medical Technician, and as a Nationally Registered EMT-Paramedic for over eighteen years.

EDUCATION

University of Richmond, Richmond, VA
Graduate Studies in Human Resources Management, 2006

East Carolina University, Greenville, NC
Bachelors in Science in Criminal Justice, 1999

CERTIFICATIONS & LICENSES

Certified Fire Investigator (CFI) – International Association of Arson Investigators, 2010,
Certificate # 24-031507

Certified Fire and Explosion Investigator (CFEI) – National Association of Fire Investigators, 2011

Certified Vehicle Fire Investigator (CVFI) – National Association of Fire Investigators, 2011

Private Investigator Licenses: State of Louisiana, State of Arkansas, and the State of Tennessee



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
1431 Greenway Drive, Suite 900
Irving, TX 75038

(877) 271-1168 Telephone
(972) 518-0011 Facsimile

Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2016

March 3, 2016

Re: RCG File No: 02213048
LLV Number: 8202112
VMF Location: 2100 Martin Luther King, Jr. Boulevard in Tyler, Texas
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 8202112 that occurred at 6901 Hollytree Circle in Tyler, Texas, on January 5, 2016. In the course of the work, we examined and documented the fire-damaged vehicle and interviewed the VMF Shop Supervisor on January 11, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 2100 Martin Luther King, Jr. Boulevard in Tyler, Texas. The work to complete this assignment was performed by Fire Consultant Gary L. Cochran, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigation".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of origin within the engine compartment was determined to be on the right side in the area of the brake lines.

3. The specific ignition sequence and cause of the fire was determined to be the result of the driver side brake line developing a split or crack from the rubber line, causing brake fluid to spray onto the hot engine surface and/or hot brake pads, causing the brake fluid to ignite.

Observations

Exterior Inspection:

Exterior examination of the LLV revealed severe fire damage to the entire vehicle.

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments revealed severe fire damage to every compartment.

Engine compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated on the driver side, in the area of the brake line. We observed severe fire damage to the engine compartment, which included all combustibles within the engine compartment and rubber brake line tubing in the area of origin. We examined the oil level, which was within the recommended range. We were not able to examine the transmission fluid level nor the power steering fluid level due to severe fire damage.

We examined the electrical system of the vehicle and noted no observable adverse electrical activity within the electrical system. We examined the fire-damaged wiring harnesses within the vehicle and observed no adverse electrical activity. Fire damage was noted to all wiring conductors. We observed that the battery had been severely damaged as a result of the fire and the battery cables were observed disconnected during our examination, as a result of the fire. The vehicle was equipped with a GM fuel filter system.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of severe fire damage in the wheel well areas, as well as the top and sides of the engine. The involved LLV was mounted on a GM frame. We observed in the area of origin and on the driver side of the engine near the driver side front wheel area, what appeared to be a brake line that cracked or split, which during the time the brake was depressed, sprayed brake fluid onto the hot brake pad and/or the hot components within the engine.

We observed a split or cracked rubber brake line still partially attached to the fitting at the time of our examination.

Fuse Panel Inspection:

Examination of the remaining fire-damaged fuse panel, which was observed within the engine compartment revealed no evidence of electrical activity, but we did observe severe fire damage to the remains of the fuse panel.

Area of Fire Origin:

The area of fire origin was determined to be on the driver side of the engine compartment near the area of the brake line.

The point of fire origin was on the driver side rubber brake line at the metal fitting.

There was physical evidence of the brake line revealing what appeared to be a split or crack in the rubber brake line at the fitting.

Contributing Factors:

During our examination, we determined that the driver side brake line developed a split or crack from the rubber line, causing brake fluid to spray onto the hot engine surface and/or hot brake pads, causing the brake fluid to ignite.

The first fuel ignited was brake fluid from the split or cracked brake line.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interviews:

We were not able to interview the carrier/operator during our examination due to his work schedule.

We interviewed the VMF shop supervisor, who did review the incident report. He stated that the carrier/operator had smelled smoke inside the vehicle, pulled the vehicle over to a stop, turned the vehicle off, and exited the vehicle. He opened the hood and saw fire in the engine compartment. He then went to the rear of the vehicle and opened the rear door to save as much mail as possible. While the carrier/operator was attempting to retrieve the mail, the fire grew larger, so he moved away from the vehicle until the fire department arrived.

Service Records:

A review of the provided service records indicated that the LLV was last serviced on December 31, 2015. The mileage recorded at the time of the service was 38,341. During this service, the front brake pads were replaced among many other items. This work was completed by the VMF.

The Tyler Fire Department arrived, and extinguished the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gary L. Cochran

Gary L. Cochran, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 3, 2016
RCG File No. 02213048

Photograph 1
View of front of vehicle.



Photograph 2
View of fire damage and pattern on driver side fender. Arrow indicates area of origin.



March 3, 2016
RCG File No. 02213048

Photograph 3

View of area of origin on driver side. Arrow indicates damaged brake line.



Photograph 4

View of damage (split or crack) in driver side brake line.



March 3, 2016
RCG File No. 02213048

CVs



**GARY L. COCHRAN, IAAI-CFI, NAFI-CFEI & CVFI
FIRE CONSULTANT**

Mr. Cochran has more than 30 years of experience in fire service. He has actively served as a Fire Investigator for two separate municipalities, and has served as an active member of the Tarrant County Fire/Arson Investigator's Association and most recently with the Grapevine Fire Department, Texas, as the Fire Code Enforcement Officer and Fire Investigator. He was also the Fire Code Enforcement Officer and Fire Investigator for the Town of Westlake, Texas. Mr. Cochran has extensive training in fire and criminal investigations, as well as hazardous material, nuclear, chemical, and biological and EMS incidents. He is certified through the International Association of Arson Investigators as a Certified Fire Investigator (IAAI-CFI) as well as the National Association of Fire Investigator as a Certified Fire and Explosion Investigator (NAFI-CFEI) and Certified Vehicle Fire Investigator (NAFI-CVFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Fire Protection Technology, Tarrant County College
Fire Service Administration, Weatherford College
Occupational Safety & Health, A.A.S., Columbia Southern University
International Association of Arson Investigators (IAAI), Texas Chapter, 2007 - Present
International Association of Arson Investigators (IAAI), 2007 - Present
International Association of Fire Fighters (IAFF)
National Association of Fire Investigators (NAFI), 2005 - Present
Texas Firefighters Association, 1987 - Present
Tarrant County Fire and Arson Investigators Association (TCFAIA), 2005 - Present
North Texas Fire Investigators Association (NTFIA), 2008 - Present

SPECIALIZED EDUCATION

Complex Arson Investigation Techniques for the Insurance Industry (IAAI) 2014
A.A.S. - Occupational Safety & Health, Columbia Southern University 2012
Texas IAAI Arson Conference, Austin, TX 2012
Pate Hands-On Vehicle Fires – Tested 2012
CVFI (NAFI) - Tested 2012
Texas IAAI Arson Conference, Austin, TX 2011
NFA – Forensic Evidence Collection, Emmitsburg, MD 2011
South Texas Arson Conference, South Padre, TX 2010
NFA – Fire/Arson Origin and Cause Investigations, Emmitsburg, MD 2010
NFA 25–Inspections, Testing and Maintenance of Water Based Fire Protection Systems, Houston, TX 2010
NFPA 72 - Inspections Testing and Maintenance of Fire Alarms, Houston, TX 2010
East Texas Arson Seminar, Longview, TX 2009
Certified Fire Investigator (IAAI-CFI) Tested 2009
Legal Aspect of Fire Investigations, North Richland Hills, TX 2009
East Texas Arson Seminar, Longview, TX 2008
NFA – Developing Fire & Life Safety Strategies, Emmitsburg, MD 2008
NFA – Plans review for Inspectors, Emmitsburg, MD 2007
TCLEOSE Basic Police Officer 2007
Intermediate Fire/Arson Investigator 2007
Intermediate Fire Inspector 2007
IAAI Texas Chapter Arson Seminar, Austin, TX 2007
TEEX – Courtroom Preparation for First Responders, Benbrook, TX 2006
Certified Fire and Explosion Investigator (NAFI-CFEI) Tested 2006
Advanced Firefighter 2005
Juvenile Fire Setter Intervention Specialist I & II Tested 2005
IAAI Texas Chapter Arson Seminar, Austin, TX 2005
Hazardous Material Technician School, Dallas, TX 2000
Paramedic School, Hurst, TX 1985
Basic Firefighter School, Bedford, TX 1983



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
5707 South Laburnum Avenue
Richmond, VA 23231
757-229-2226 Telephone
(888) 286-9943 Facsimile

March 3, 2016

Re: RCG File No: 47602534
LLV Number: 8202141
VFM Location: 3300 Odd Fellows Road in Lynchburg, Virginia
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 8202141, which reportedly occurred at 3510 Ridgecross Drive in Lynchburg, Virginia on January 5, 2016. In the course of the work, we examined and documented the fire-damaged vehicle, and interviewed the carrier/operator on January 14, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility, at 3300 Odd Fellows Road in Lynchburg, Virginia. The work to complete this assignment was performed by Fire Consultant William R. Clark, IAAI-CFI. This report and file are being reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach, as recommended in the current edition of National Fire Protection Association's NFPA-921, "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the interior passenger compartment of the involved LLV.
2. The specific area of fire origin was determined to be in the dashboard of the operator compartment in and around the headlamp switch.
3. The specific ignition sequence and cause of the fire was determined to be a failure of the headlamp switch, most likely associated with the dimmer rheostat switch.

4. According to service records, the headlamp switch was replaced in November of 2011.

Observations

Exterior Inspection:

The exterior of the vehicle was intact and free of fire damage.

Interior Inspection:

The interior examination revealed that the instrument panel had been removed prior to this investigators arrival, exposing the interior section of the dashboard. The panel had been removed by a mechanic to ensure that the fire was out. The only noticeable damage to the interior of the vehicle was minor heat deformity to the left side vent, which had also been removed. The interior section of the dash displayed a small pronounced fire pattern, which originated at the location where the headlight switch had been mounted. The headlight switch was found on the metal shelf next to the driver's seat; the switch had been removed during the mechanic's inspection. The switch exhibited fire damage to the front area, where the push/pull knob controls the ON and OFF positions of the headlights. Electrical conductors located inside the dash did not display any fire damaged. The odometer displayed 194,014 miles.

Engine Compartment Inspection:

The engine compartment did not sustain any fire damage. The oil dipstick displayed that the oil level was within normal operating levels. The transmission fluid level was also found within operating limits. The fuel filter for this vehicle is located on the left side of the 2.5 liter engine and was a GM fuel filter ssytem.

Undercarriage Inspection:

The undercarriage was free of any fire damage. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

None the fuses in the panel displayed any evidence of a failure.

Area of Fire Origin:

The area of origin was determined to be the headlight switch that is located on the left top corner of the instrument panel. The vehicle's wiring harness and headlight switch were replaced on November 3, 2011, according to the vehicle's service records.

Contributing Factors:

An internal failure of the headlight switch caused the minor fire.

Evidence Collected:

The headlight switch (P/N D1506A) was collected as evidence and shipped to the Charlotte, North Carolina office on January 15, 2016.

The headlamp switch was examined in the lab and confirmed to have failed at the dimmer rheostat.

Interview:

The driver was interviewed on January 13, 2016 by telephone. He stated that he had been driving the vehicle from mailbox to mailbox. He smelled something burning, then observed smoke coming from the dashboard area. He looked into the vent and observed a small flame. He attempted to blow the flame out, but he was unsuccessful. He then started removing the mail from the vehicle; he had a passing motorist call the fire department. The flame grew to approximately 8" to 11". He attempted again to extinguish the flame, and this time he was successful. The City of Lynchburg Fire Department arrived and determined the fire was out, and therefore, they took no action. He had been driving the vehicle for about seven hours before the fire occurred. The headlights were on when the fire occurred.

Service Records:

A review of the service records indicated that the headlamp switch was replaced in November of 2011. No other work performed indicated that it had any contributing factors to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William R. Clark

William R. Clark, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 3, 2016
RCG File No. 47602534

Photograph 1
Right side of vehicle.

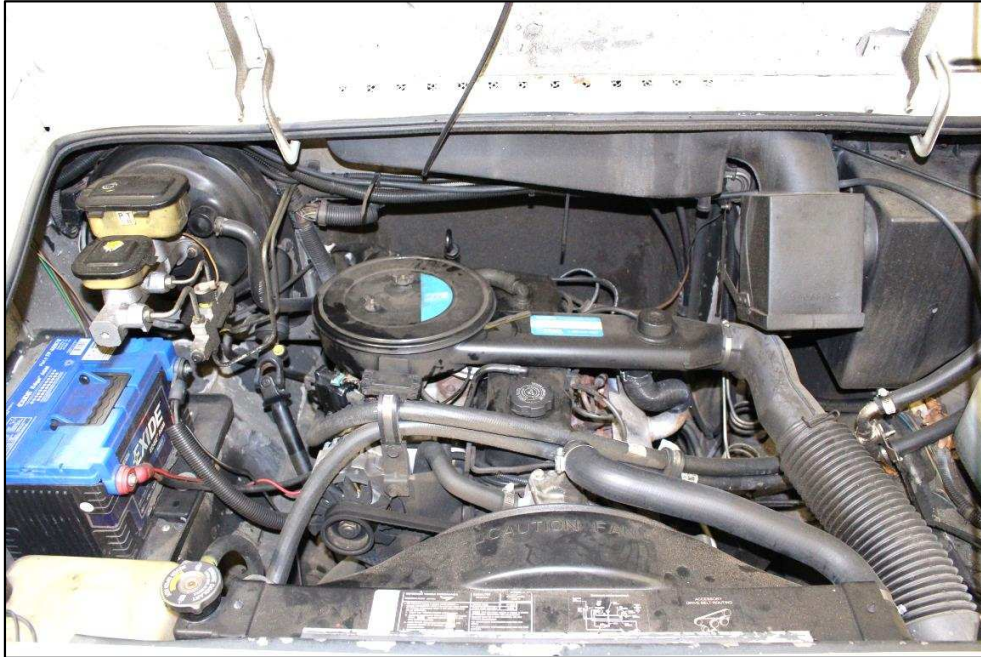


Photograph 2
Left side of the vehicle.



March 3, 2016
RCG File No. 47602534

Photograph 3
Engine compartment.



Photograph 4
Undercarriage view of fuel filter located on the left side of the engine.



March 3, 2016
RCG File No. 47602534

Photograph 5

Overview of instrument panel area – the panel is in the open position.



Photograph 6

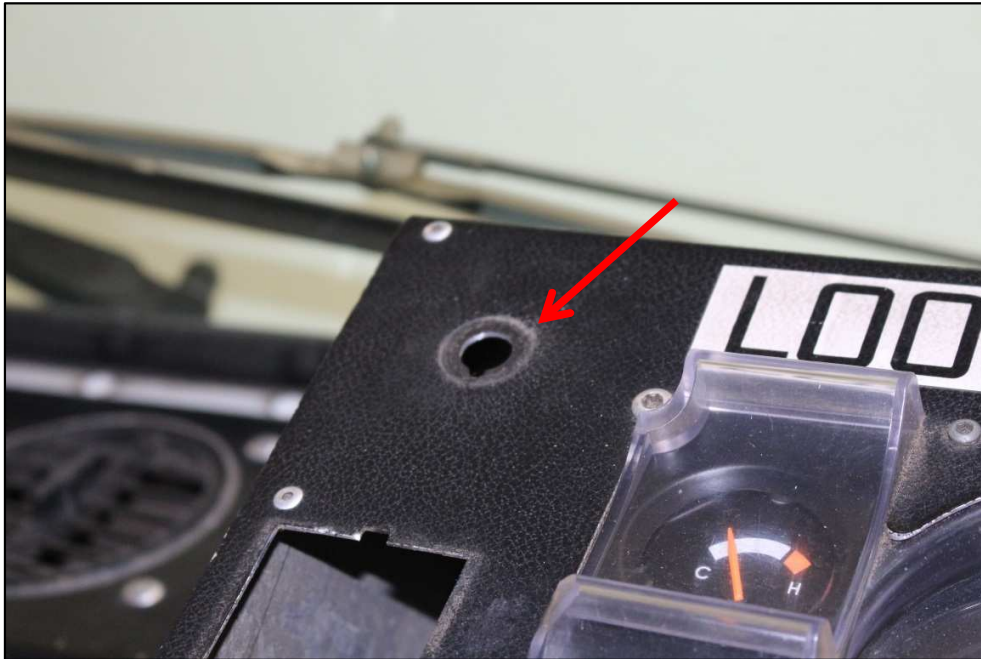
Exterior view of instrument panel – fire originated left side of panel.



March 3, 2016
RCG File No. 47602534

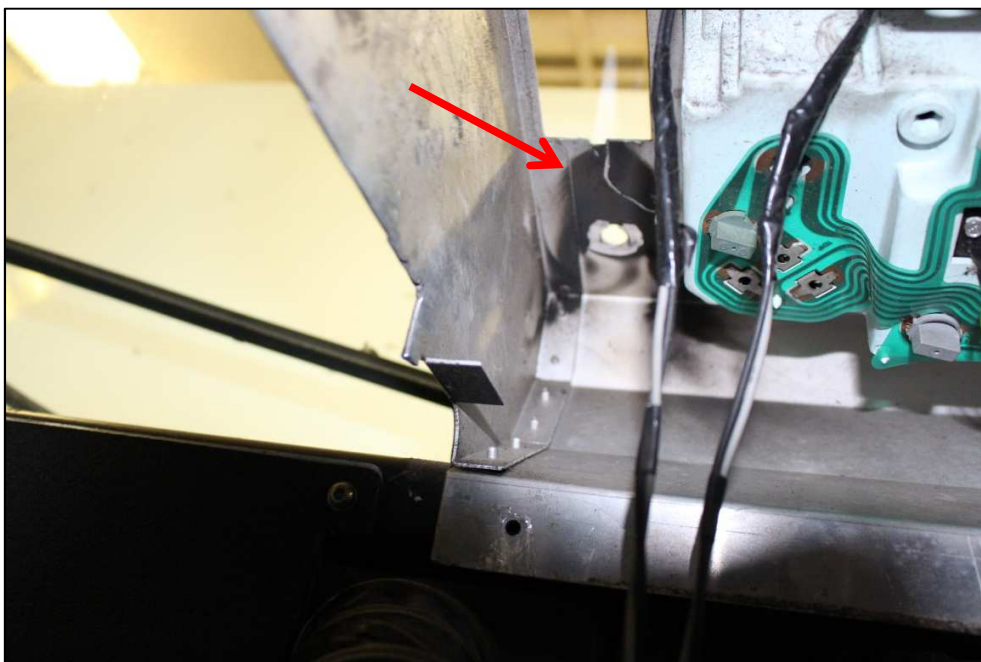
Photograph 7

Close-up view of headlight switch location.



Photograph 8

Interior view of instrument panel – fire pattern located at headlight switch location.



March 3, 2016
RCG File No. 47602534

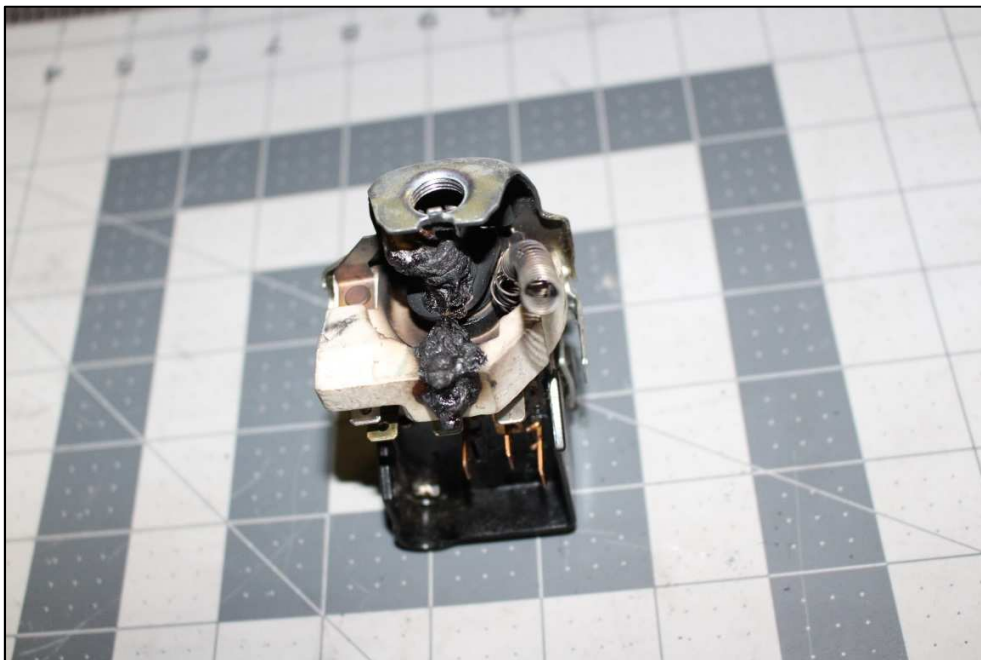
Photograph 9

Top view of headlight switch.



Photograph 10

Front view of headlight switch.

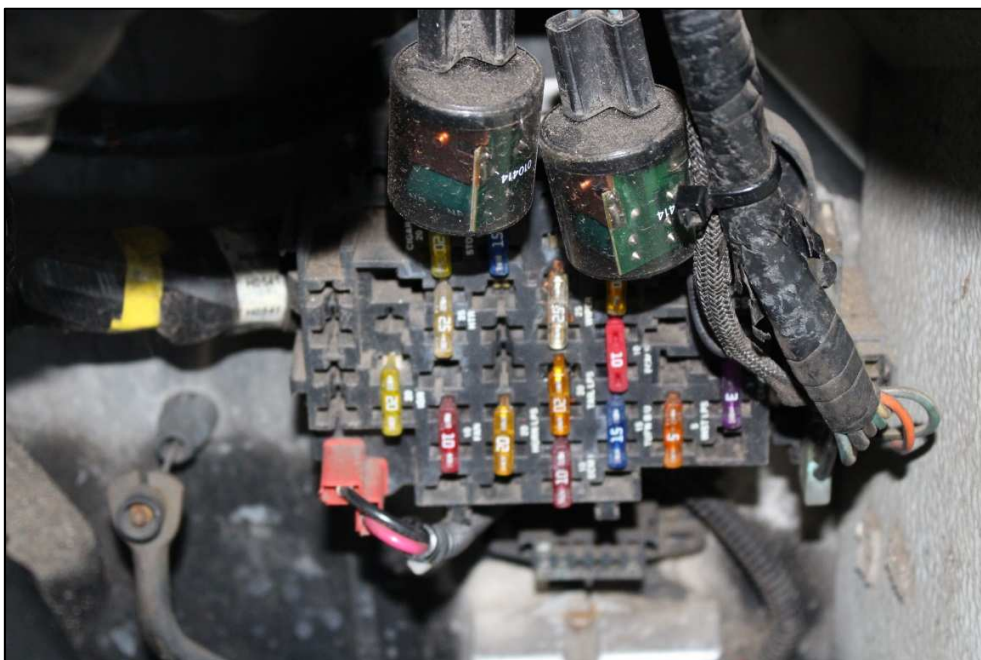


March 3, 2016
RCG File No. 47602534

Photograph 11
Bottom section of headlight switch.



Photograph 12
View of fuse panel.



March 3, 2016
RCG File No. 47602534

CVs



**William “Bill” Clark, IAAI-CFI, CFEI, CVFI
Fire Consultant**

Mr. Clark is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (VACFI) with the Virginia Department of Fire Programs. Mr. Clark is a Registered Private Investigator with the Virginia Department of Criminal Justice Services.

Mr. Clark has conducted over 900 fire/explosions investigations as a law enforcement officer and private fire investigator. These fire/explosion investigations have involved commercial & residential structures, as well as heavy equipment and vehicles. Mr. Clark has extensive experience investigating fires involving injury and death. Mr. Clark has also conducted investigations involving hazardous materials. Mr. Clark has instructed firefighters, police, and military in fire investigation procedures, death investigations, evidence collection, homemade explosives, and post blast investigations, weapons of mass destruction & clandestine lab recognition and safety.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Tidewater Community College, Virginia Beach, VA
Associates in Fire Science, 12 Credit Hours

Virginia Department of Fire Programs
Firefighter 1, 2, & 3, 1987

Virginia Department of Criminal Justice Academy, Petersburg, VA
Police Academy, 1989

National Fire Academy, Emmetsburg, MD
Fire/Arson Investigation Course, 1996

Virginia Department of Forensic Sciences, Lynchburg, VA
Death Investigation, 2000

Greater Cincinnati Regional Arson and Fire Investigation Association
Fire Investigation, 2003

North Carolina/South Carolina International Association of Arson Investigators Fire Investigation Seminar, 2015

Virginia State Police, Richmond, VA
Vehicle Theft Investigation, 2003

Virginia Chapter of the International Association of Arson Investigators
Electrical Fire Investigation, 2000
Fire Investigation, 2001
Small Appliance Fire Investigation 2001
Fire Investigation, 2003
Fatal Fire Investigation, 2004
Fire Investigation, 2008
Meeting the 1033/921 Challenge, 2013

William “Bill” Clark, IAAI-CFI, CFEI, CVFI

Bureau of Alcohol, Tobacco, Firearms, & Explosives, Richmond, VA
Post Blast Investigation, 2004

Virginia Department of Fire Programs, Norfolk, VA
Environmental Crimes Investigations, 2005
Arson Scene Evidence Processing, 2009

Central Shenandoah Criminal Justice Training Academy, Weyers Cave, VA
Crime Scene Investigations Course, 2005

Central Virginia Criminal Justice Academy, Lynchburg, VA
Reid Interviewing Techniques, 2006
Reid Interview Advanced Techniques, 2007

Public Agency Training Council
Vehicle Fire Investigation Course, 2006
Arson Evidence Collection Course, 2007
Arson for Profit Course, 2009

Federal Emergency Management Agency, Anniston, AL
Hazardous Materials Technician, 2008

Zero Point, Virginia Beach, VA
Advanced Homemade Explosives, 2012

Safety Unlimited
HAZWOPER Training & Certification, 2014

Member of: National Association of Fire Investigators
 International Association of Bomb Technicians & Investigators
 International Association of Arson Investigators
 Virginia Chapter – International Association of Arson Investigators

EMPLOYMENT HISTORY

2014 to Present	Rimkus Consulting Group, Inc.
2006 to 2014	Fire Technology Consultants, LLC (Part Time)
2009 to 2012	Joint Improvised Explosive Device Defeat Organization (MPRI Contractor)
2004 to 2009	Albemarle County Fire Marshal's Office
2003	Donan Engineering Company
2001 to 2006	Danielson Investigative Services (Part Time)
2001 to 2006	Fire Analysis Consulting Group (Part Time)
1998 to 2003	Amherst County Sheriff's Office
1989 to 1998	City of Franklin Police Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
5707 South Laburnum Avenue
Richmond, Virginia 23231
757-229-2226 Telephone
(888) 286-9943 Facsimile

December 21, 2018

Re: RCG File No: 47603546
LLV Number: 8202390
VMF Location: 3300 Odd Fellows Road Lynchburg, Virginia
Subject: Preliminary/Final Report

Dear

On November 3, 2018, a fire involving USPS LLV vehicle 8202390 reportedly occurred while the carrier was doing the morning vehicle check at the USPS facility. The vehicle was manufactured by General Motors in 1988 and was a Grumman model LLV-A RH with VIN 1GBBS10E7J2307714.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Lynchburg Aux of Roanoke VMF located at 3300 Odd Fellows Road Lynchburg, Virginia. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on November 20, 2018. The vehicle examination was conducted by Fire Consultant Scott V Gartner, IAAI-CFI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations" and NFPA 1033 "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The vehicle sustained moderate to severe fire damage to the engine and operator compartments from a fire originating within the engine compartment.
2. The rear interior storage mail compartment sustained minor to moderate smoke and soot damage.

3. The area of origin was determined to have been on the right hand, operators' side of the engine compartment, along the right side of the 2.5 liter, L-4 engine.
4. The specific ignition sequence and cause of the fire was inconclusive due to the severity of damage in the area of origin, however the possibility that adverse electrical activity occurred to one of the conductors or switches connecting to the engine or other components in the area of origin could not be eliminated.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The front grill and lights of the LLV were observed to be intact with no fire damage. The hood of the vehicle was completely burned and melted away, extending from fender to fender. The aluminum roof of the vehicle that covered the operator's compartment had melted as a result of the fire. The mail side door and frame adjacent to the steering wheel had also been melted by the fires extension. The driver's side of the engine compartment exterior aluminum frame was melted to just above the wheel well, however the door was mostly melted, indicating the fire had extended from the driver side towards the mail side of the engine compartment and extending into the passenger compartment.

No damage was observed to the exterior cargo area of the vehicle with the exception of blistered paint on the roof corresponding with fire spread from the direction of the engine and operator compartments. Based on the fire patterns observed, it was determined the fire initiated within the engine compartment right side near the rear of the engine then progressed into the operator's compartment through the windshield and bulkhead.

Interior Inspection:

The interior cargo/mail area sustained minor to moderate fire, smoke and soot damage. Fire patterns indicated the fire melted portions of the aluminum panel between the operator's and cargo compartment. Moderate smoke and soot damage was observed along the ceiling and upper side walls of the cargo space. Fire debris from the operator's compartment was observed on the floor of the cargo compartment.

The operator's compartment sustained severe fire and heat damage. Most of the combustible materials located within this area were consumed by the fire, including the fuse panel and various electrical conductors in the dashboard area on the driver's side. Fire patterns indicated this was the result of the fire's extension from the engine compartment near the bulkhead/dashboard on the driver's side. The most severe damage was observed on the driver's side of the compartment, where the bulkhead had

completely burned through from the direction of the engine compartment. The bulkhead was also burned through from the direction engine compartment on the mail side. The bundled wiring harnesses on the driver's side connecting from the fuse panel towards the Engine Control Module (ECM) sustained severe fire damage. The ECM had been positioned in the center of the dash and was observed with severe fire damage. The bulkhead was melted on both sides of the ECM. The remnants of an electric fan and other electrical components and switches were found in the fire debris along the burned through areas of the bulkhead.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5 L-4 engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment was observed with moderate to severe fire damage. The driver's side contained the brakes master cylinder, battery, alternator, rubber and plastic components and the majority of the electrical conductors within the compartment. The ignition coil and fuel lines were also on this side. The components on this side sustained severe fire damage with intensity increasing towards the bulkhead; the master cylinder was separated from the vacuum brake cylinder. The vacuum break cylinder was rotated towards the center of the vehicle or the area of origin; this was caused by the melting of the bulkhead. The starter was located on the driver's side intact with little to no fire damage, damage to the wires occurred further up towards the top of the engine near the distributor. The alternator was missing the main bottom mounting bolt causing excess movement and vibration; this was missing prior to the fire.

The mail side contained the power steering pump, exhaust manifold, fuel filter hydraulic lines, spark plugs, spark plug wires, and plastic and rubber components. The fire damage on the mail side was moderate to severe with the spark plug wires consumed by the fire. The damage was more severe closer to the bulkhead at the rear of the engine. The fuel filter was intact with no signs of leaking. The fuel lines came up along the rear of the engine and turned to the driver's side of the engine compartment. The fuel lines were observed to be intact in this area. The most intense damage to the engine compartment occurred on the driver's side rear engine area progressing to the bulkhead/dashboard. Fire patterns indicated this was the area of origin.

Fire patterns indicated that the moderate damage to the front of the engine compartment, including the radiator, fan blades, pulleys and hoses were caused by radiated heat originating from the rear of the engine towards the bulkhead on the driver's side. No evidence was observed of the fire originating within the brakes, wheel hubs or tires in the area of the engine compartment.

The battery for the vehicle was located at the front driver's side of the engine compartment. The battery, the battery terminals, and battery cables were examined

and found to be attached but severely damaged by fire. The battery was not intact and separated into cells. The battery, battery terminals, and battery cables could not be eliminated as a cause of the fire due to the extensive damage. The engine oil, transmission fluid, and power steering fluid were examined and observed to be within their normal operating range.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle, except for a limited area below the rear of the engine compartment that appeared to have been caused by drop down from above. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The starter was located on the right side of the engine and intact with little to no damage, wires attached to the starter still had insulation up to the area of origin. The overall observation was that the fire began above the undercarriage and more specifically within the right side of the engine compartment along the engine. All four tires were intact.

Fuse Panel Inspection:

The fuse panel was positioned behind the instrument panel in the dashboard on the driver's side, this side sustained severe fire damage and the majority of the dash and component were consumed by the fire.

Area of Fire Origin:

The area of origin was determined to be the right side of the engine compartment to the rear of the engine. Various electrical conductors in bundled harnesses were observed in this area with all of the insulation burned off. The harnesses fed the electronic ignition components and various sensors; they also ran to the alternator. The main power from the battery supplying the starter and alternator were observed in this area. The electrical conductors could not be examined more closely due to the severity of damage in the area, however no adverse electrical activity was observed to the remaining conductors.

Potential Contributing Factors:

It was reported that the carrier attempted to start the vehicle and it would only turn over and not start just prior to the fire. This indicates an unknown adverse electrical event involving the ignition wiring and related electrical components which may have contributed to the cause of the fire.

The cause of the fire is inconclusive; however, the most probable cause was an unspecified electrical event occurring within the conductors or components along the driver's side of the engine. Further, the vibration and movement from the alternator due to the missing main bolt could have contributed to the electrical event occurring on the right side of the engine.

Evidence Collected:

The ECM, positioned inside of the dashboard was observed with severe fire damage and was collected to be examined more closely by engineers in the laboratory. The alternator positioned on the right side of the engine was observed with severe fire damage to the regulator connectors and was collected to be examined by engineers in the laboratory. The wiring harness and electrical components located in the fire debris on the right side of the vehicle were collected for further examination in the laboratory. The remaining condition of the components within the area of fire origin would unlikely reveal any relevant data from testing the remnants.

Interview:

On December 12, 2018, a phone interview was conducted with vehicle operator. Mr. stated that he was performing the morning check on vehicle 8202390 at the Lynchburg, Virginia USPS facility. He attempted to start the vehicle when it would only turn over and not start. He saw some smoke coming from the front of the vehicle and thought it was because of the cold weather. He called in the repair ticket to the VMF at 8:38 A.M., the ticket stated the vehicle was smoking a little yesterday and it turns over and won't catch today. He also stated he was told a vehicle was on fire 10 minutes later and did not know it was his at first, when he found out it was his vehicle he looked over at the vehicle and it had fire coming out of the engine and drivers area of the vehicle. Mr. did drive the vehicle the day prior and it started and ran fine all day. No odors, leaks, or unusual sounds were noted.

Service Records:

Service records going back 2 years were obtained and reviewed. Below is a listing of the most current repairs performed on LLV 8202390:

- 10/29/18 - Would not start, battery dead, jump started the vehicle (interior lights left on).
- 10/12/18 - Right upper control arm replaced. Starter was removed and replaced for the repair.
- 9/28/18 - No Horn.

- 9/14/18 - Left Rear Tire.
- 9/14/18 - Preventive Maintenance
- 8/6/18 - All hazard light were out
- 7/26/18 - Left flasher strobe out

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Scott V. Gartner

Scott V. Gartner, IAA-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

December 21, 2018
RCG File No. 47603546

Photograph 1

Front view of the 1988 Grumman model LLV-A 8202390.



Photograph 2

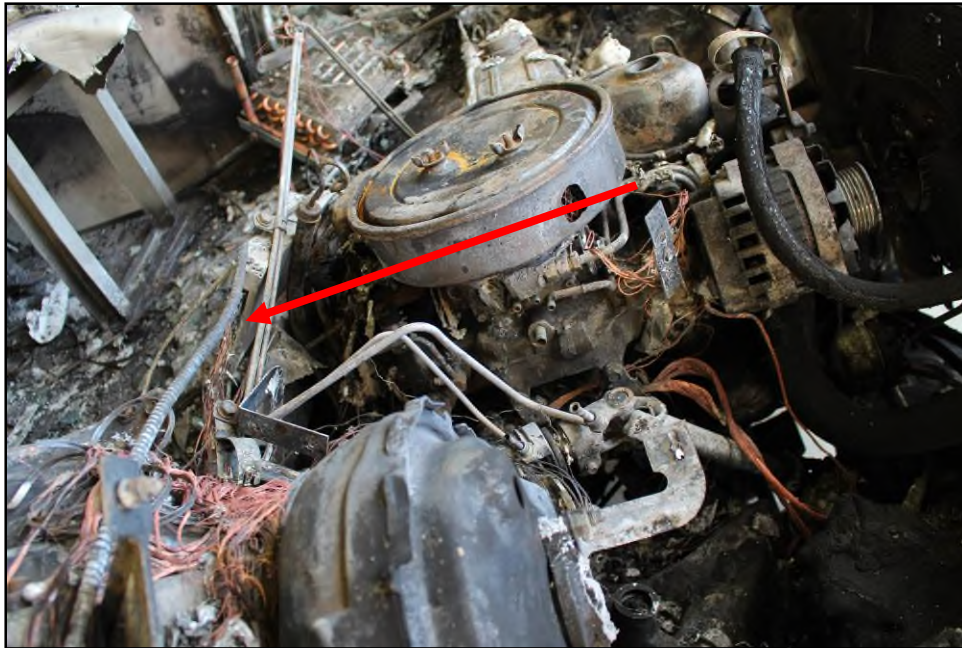
Rear view of the LLV, roof is melted and buckled.



December 21, 2018
RCG File No. 47603546

Photograph 3

Right driver side of the engine, severe damage, fire spread from front to rear. Bulkhead destroyed by the fire.



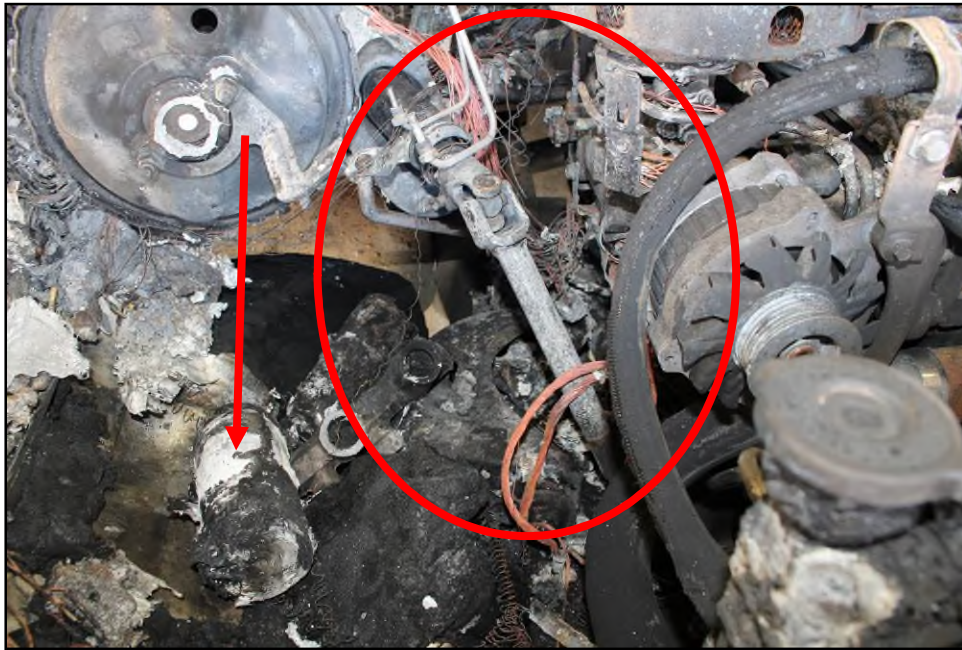
Photograph 4

Missing bolt on the alternator.



Photograph 5

Area of origin, battery separated into cells.



Photograph 6

Photograph of fire after fire department extinguishment. Photograph provided.



December 21, 2018
RCG File No. 47603546

Curriculum Vitae



SCOTT V. GARTNER, IAAI-CFI FIRE CONSULTANT

Mr. Gartner is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He is also a Certified Firefighter, Hazardous Materials Technician, Fire Inspector, Fire Officer, DHS Instructor, Post Blast Investigator, and Certified Paramedic

Mr. Gartner served as a Fire Investigator / Supervisor with the City of Norfolk, where he has investigated and determined the origin and cause of more than 800 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation.

Mr. Gartner has testified in court proceedings involving the investigation of fires, explosions, and hazardous materials. He has also served as a Special Deputy United States Marshal and Accomack County Deputy Sheriff.

Mr. Gartner has extensive experience in all facets of the fire service, with over 28 years of municipal fire service experience. He retired from municipal service as an Assistant Fire Marshal / Lieutenant after serving as a Hazardous Devices Technician, Fire Investigator, Hazardous Materials Investigator, Explosives Canine Handler and Firefighter Paramedic.

Mr. Gartner has also been trained in hazardous device analysis and mitigation, explosives recognition/disposal, hazardous materials mitigation, HAZWOPER operations. He also performed municipal fire inspections of residential, commercial, and industrial facilities. He has knowledge of National Fire Protection Association (NFPA), International Fire Code (ICC) and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance.

Mr. Gartner has served on numerous local, state, and national committees / taskforces in involving fires, explosives, and hazardous materials.

Mr. Gartner has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems. He also has extensive knowledge in prevention and response to bombing events.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Commonwealth of Virginia Certified Fire Investigator.
Commonwealth of Virginia Certified Fire Inspector.
Department of Homeland Security Certified Instructor.
Commonwealth of Virginia Certified Paramedic.
Commonwealth of Virginia Certified Fire Officer.
Commonwealth of Virginia Certified Environmental Crimes Investigator.
Commonwealth of Virginia Certified Fire Fighter
Hazardous Devices Technician.
Explosives Canine Handler.
Department of Homeland Security Certified Hazardous Material Technician



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
5707 South Laburnum Avenue
Richmond, Virginia 23231
757-229-2226 Telephone
(888) 286-9943 Facsimile

June 21, 2018

Re: RCG File No: 47603371
LLV Number: 8202756
VMF Location: 1001 School Street Richmond, Virginia
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving LLV 8202756, VIN 1GBBS10E7J23008071. This fire reportedly occurred at 4115 Heritage Road in Hopewell, Virginia on May 26, 2018, at 1:30 P.M.

In the course of our work, we examined and documented the fire-damaged vehicle on June 11, 2018. The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 1001 School Street in Richmond, Virginia. The work to complete this assignment was performed by Fire Consultant William R. Clark, IAAI-CFI (V). A technical review of this report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach, as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was at and around the exhaust manifold on the left side of the engine where a shroud came in direct contact with the exhaust manifold.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a plastic shroud that extended from the air filter housing to the front of the vehicle becoming dislodged, and came in direct contact with the manifold causing the minor fire.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. We observed no fire and heat damage to the exterior of the vehicle.

Interior Inspection:

An examination of the interior area including the cargo area was conducted. No fire damage was observed within the interior of the vehicle.

Engine Compartment Inspection:

The left (mail side) of the interior section of the hood displayed soot from a small fire. The bottom left of the radiator and the front left tire plastic fender shroud displayed minor fire damage. The plastic windshield fluid reservoir, which was positioned above this area of damage, was undamaged. The hose that extended from the vapor recovery can to the throttle body was melted. The vapor recovery hose displayed minor fire damage.

The plastic shroud that was located at the top of the engine and extended from the air filter housing to the front of the engine compartment on the left side was missing, also, the bracket that held the plastic shroud in place displayed melted plastic. The air filter inside the housing was intact, eliminating a possible back fire.

Note: The vehicle's transmission, radiator, battery, relay and battery cables were replaced after the fire. The fire (minor) damaged radiator was located in the rear of the

vehicle, along with positive battery cable. The cable had been cut by the fire department, it was absent of any fire damage. The engine was a 2.5 liter, fuel injection.

Undercarriage Inspection:

The left side of the bottom section of the motor displayed a heat pattern. The manifold which can be view from the undercarriage had a pronounced pattern that appeared to have been caused by a plastic component coming in contact with the hot surface. The involved LLV had an AM General frame and GM fuel system.

Fuse Panel Inspection:

The fuse panel was examined and observed with no fire damage. No fuses were observed blown or open.

Area of Fire Origin:

The area of origin was determined to be on the left side of the engine at the exhaust manifold.

Potential Contributing Factors:

The plastic shroud that extended from the air filter housing to the front of the vehicle became dislodged, and came in contact with the manifold causing the minor fire.

Evidence Collected:

No evidence was collected.

Interview:

The operator of the vehicle stated that the fire occurred between 1:00 P.M. and 1:30 P.M. The Prince George Fire Department responded. She made about 15 deliveries that day. She stopped at a mail box on the road and realized she had a package for the residents. As she was turning up the driveway, the vehicle started "missing". She turned the vehicle off once she arrived, to let it cool down, and then the vehicle started smoking. She tried to pop the hood, but she could not get it open. She saw a small fire on the left side of the engine. There was no illumination of the dash lights before the fire or while driving it that day. There was no fire burning under the vehicle, however, as the firefighters were putting the fire out, pieces were falling to the

ground. She drove that vehicle every day, and had problems in the past with the transmission, shifter, and the vehicle not picking up speed. Will, a vehicle maintenance technician, checked the vehicle the morning of the fire and it was okay to drive.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William R. Clark

William R. Clark, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

June 21, 2018
RCG File No. 47603371

Photograph 1

View of the front of the vehicle.



Photograph 2

View of the right (driver's) side of the vehicle.



June 21, 2018
RCG File No. 47603371

Photograph 3

View of the rear of the vehicle.



Photograph 4

View of the left (mail) side of the vehicle.



June 21, 2018
RCG File No. 47603371

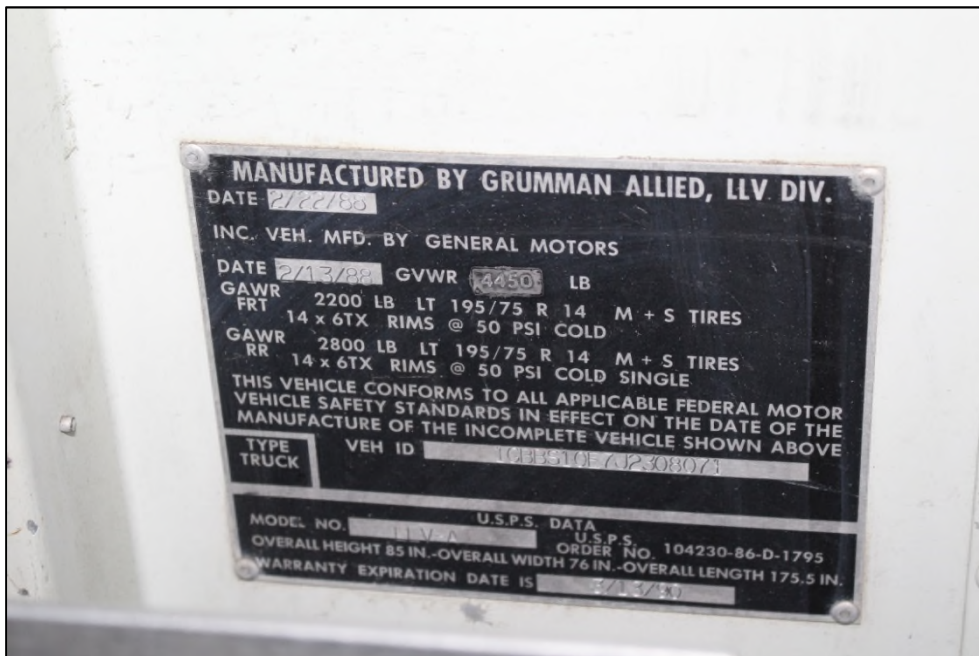
Photograph 5

View of the driver's area.



Photograph 6

View of the VIN plate.



June 21, 2018
RCG File No. 47603371

Photograph 7

View of the cargo area.



Photograph 8

View of the minor fire damage to the radiator that was removed.



June 21, 2018
RCG File No. 47603371

Photograph 9

View of the battery cable that was removed.



Photograph 10

View of the engine compartment, note the soot collected on the left side of the hood.



June 21, 2018
RCG File No. 47603371

Photograph 11

View of the right side of the engine.



Photograph 12

View of the left side of the engine.



June 21, 2018
RCG File No. 47603371

Photograph 13

View of the area of origin.



Photograph 14

View of the fire damage to the wheel cover shroud.



Photograph 15

View of the area of origin.



Photograph 16

View of the bracket that holds the plastic air filter shroud to the front section of the engine compartment, there is melted plastic on the bracket.



June 21, 2018
RCG File No. 47603371

Photograph 17

View of the front of the undercarriage.



Photograph 18

View of the rear undercarriage.



Photograph 19

View of the heat pattern on the left side of the engine.



Photograph 20

View of the dark pattern on the manifold.



Photograph 21

Close-up view of the dark pattern on the manifold.



Photograph 22

View of the dark pattern on the manifold.



June 21, 2018
RCG File No. 47603371

CVs



**William “Bill” Clark, IAAI-CFI, CFEI, CVFI
Fire Consultant**

Mr. Clark is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (VACFI) with the Virginia Department of Fire Programs. Mr. Clark is a Registered Private Investigator with the Virginia Department of Criminal Justice Services.

Mr. Clark has conducted over 900 fire/explosions investigations as a law enforcement officer and private fire investigator. These fire/explosion investigations have involved commercial & residential structures, as well as heavy equipment and vehicles. Mr. Clark has extensive experience investigating fires involving injury and death. Mr. Clark has also conducted investigations involving hazardous materials. Mr. Clark has instructed firefighters, police, and military in fire investigation procedures, death investigations, evidence collection, homemade explosives, and post blast investigations, weapons of mass destruction & clandestine lab recognition and safety.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Tidewater Community College, Virginia Beach, VA
Associates in Fire Science, 12 Credit Hours

Virginia Department of Fire Programs
Firefighter 1, 2, & 3, 1987

Virginia Department of Criminal Justice Academy, Petersburg, VA
Police Academy, 1989

National Fire Academy, Emmetsburg, MD
Fire/Arson Investigation Course, 1996

Virginia Department of Forensic Sciences, Lynchburg, VA
Death Investigation, 2000

Greater Cincinnati Regional Arson and Fire Investigation Association
Fire Investigation, 2003

North Carolina/South Carolina International Association of Arson Investigators Fire Investigation Seminar, 2015

Virginia State Police, Richmond, VA
Vehicle Theft Investigation, 2003

Virginia Chapter of the International Association of Arson Investigators
Electrical Fire Investigation, 2000
Fire Investigation, 2001
Small Appliance Fire Investigation 2001
Fire Investigation, 2003
Fatal Fire Investigation, 2004
Fire Investigation, 2008
Meeting the 1033/921 Challenge, 2013

William “Bill” Clark, IAAI-CFI, CFEI, CVFI

Bureau of Alcohol, Tobacco, Firearms, & Explosives, Richmond, VA
Post Blast Investigation, 2004

Virginia Department of Fire Programs, Norfolk, VA
Environmental Crimes Investigations, 2005
Arson Scene Evidence Processing, 2009

Central Shenandoah Criminal Justice Training Academy, Weyers Cave, VA
Crime Scene Investigations Course, 2005

Central Virginia Criminal Justice Academy, Lynchburg, VA
Reid Interviewing Techniques, 2006
Reid Interview Advanced Techniques, 2007

Public Agency Training Council
Vehicle Fire Investigation Course, 2006
Arson Evidence Collection Course, 2007
Arson for Profit Course, 2009

Federal Emergency Management Agency, Anniston, AL
Hazardous Materials Technician, 2008

Zero Point, Virginia Beach, VA
Advanced Homemade Explosives, 2012

Safety Unlimited
HAZWOPER Training & Certification, 2014

Member of: National Association of Fire Investigators
 International Association of Bomb Technicians & Investigators
 International Association of Arson Investigators
 Virginia Chapter – International Association of Arson Investigators

EMPLOYMENT HISTORY

2014 to Present	Rimkus Consulting Group, Inc.
2006 to 2014	Fire Technology Consultants, LLC (Part Time)
2009 to 2012	Joint Improvised Explosive Device Defeat Organization (MPRI Contractor)
2004 to 2009	Albemarle County Fire Marshal's Office
2003	Donan Engineering Company
2001 to 2006	Danielson Investigative Services (Part Time)
2001 to 2006	Fire Analysis Consulting Group (Part Time)
1998 to 2003	Amherst County Sheriff's Office
1989 to 1998	City of Franklin Police Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus North Carolina, PLLC
5900 Harris Technology Blvd, Suite P
Charlotte, NC 28269
(704) 896-6227 Telephone
(704) 896-6228 Facsimile
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2017

January 6, 2017

Re: RCG File No: 47107164
LLV Number: 8203019
VMF Location: 2901 Scott Futrell Drive in Charlotte, North Carolina
Subject: Preliminary/Final Report

On June 4, 2016, a fire occurred involving USPS LLV 8203019. The fire occurred while the vehicle was being operated at 5000 Robinson Church Road in Harrisburg, North Carolina. The Harrisburg Fire Department responded to the scene and extinguished the fire.

Rimkus North Carolina, PLLC was retained to examine LLV 8203019 located at the Charlotte, North Carolina VMF at 2901 Scott Futrell Drive in Charlotte, North Carolina. The work to complete this investigation was conducted by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager. In the course of our work, we traveled to the VMF, documented and photographed the remaining physical evidence, examined the involved LLV, reviewed service records and conducted interviews.

During our investigation, we employed the methodology of fire investigation utilizing a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be on the driver side of the engine compartment at and around the area where the positive battery cable was in contact and pinched in a broken frame.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of the vehicle being driven with a frame issue which cracked and broke while in operation pinching the positive battery cable causing mechanical damage to the conductor which led to arcing and ignition of available combustible materials within the engine compartment.

Observations

Exterior Inspection:

Examination of the exterior of the involved LLV commenced at the front and continued in a clockwise direction. The examination was documented with digital photographs in order to depict our findings. The exterior of the LLV sustained fire and smoke damage to the front hood area above the engine compartment. The remainder of the exterior of the LLV was intact and free of fire damage. Exterior fire pattern analysis indicated that the fire originated in the engine compartment.

Interior Inspection:

Interior examination of the involved LLV commenced in the interior operator area and continued to the cargo compartment. The interior of the involved LLV was intact and only sustained some heat damage on the fire wall between the operator compartment and the engine compartment. The fire did not originate in the operator compartment.

Engine Compartment Inspection:

An examination of the engine compartment was conducted and indicated that the area sustained the most severe fire damage. An analysis of the fire patterns indicated that the specific area of fire origin was determined to be on the operator side of the engine compartment where the positive battery cable was routed near the frame and had become pinched in the broken frame. The mechanical damage to the positive battery cable caused the conductors to become exposed which caused an electrical arcing event. That event ignited available combustible materials in the area and spread throughout the engine compartment. The battery cable had become arc severed at the area of mechanical damage. The LLV was equipped with a GM fuel filter system. The fuel lines routed in the engine compartment were fire damaged. However, it was eliminated as being a contributor to the cause of the fire.

Undercarriage Inspection:

The undercarriage of the involved LLV was examined. The undercarriage was free of fire damage. The frame at the operator side front wheel and frame was observed to be broken. The undercarriage was mostly free of fire damage with the exception of the engine compartment at the area of fire origin. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel was positioned on the interior fire wall on the right side of the operator area. The fuse panel was intact and free of fire damage. The wiring harness in the operator area, which was routed to the fuse panel, was intact and free of fire damage. All fuses were intact and none were found blown.

Area of Fire Origin:

The area of fire origin was determined to be within the engine compartment of the involved LLV. The specific area of fire origin was determined to be on the operator side of the engine compartment where the positive battery cable was routed and was mechanically damaged when the frame broke while being driven.

Contributing Factors and Interview Information:

On the day of the fire, a VMF technician was at the Harrisburg Post Office conducting some repairs on another LLV when the carrier of the involved LLV reported to him that the subject LLV was having steering problems and did not seem to be operating correctly. The technician from the VMF asked the carrier to wait for approximately 10 minutes until he finished and he would look at the vehicle. The carrier became impatient and left with the LLV to begin his mail route. While operating the vehicle after leaving, the steering became worse and the frame broke, stopping the vehicle. The carrier then reported smoke coming from the engine compartment and called 911 for assistance from the fire department. Had the carrier waited as asked, the technician could have found the problem, had the LLV parked, and the incident would have been avoided.

Evidence Collected:

No physical evidence was collected from the site.

Service Records:

A review of the provided service records for the involved LLV was conducted. In January, February, and March of 2016, the involved LLV was brought into the VMF for steering issues. It is unclear based on the provided records what repairs were made or if the issues with the frame had been observed prior to the incident. There were no

other recent listed service repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NORTH CAROLINA, PLLC

Jack R. Kennedy, III

Jack R. Kennedy III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

January 6, 2017
RCG File No. 47107164

Photograph 1

Front view of the involved LLV.



Photograph 2

Operator compartment of the involved LLV.



January 6, 2017
RCG File No. 47107164

Photograph 3

Engine compartment of the involved LLV.



Photograph 4

Positive battery cable arc severed due to mechanical damage.



January 6, 2017
RCG File No. 47107164

CVs



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
6100 Oak Tree Boulevard Suite 200
Independence, Ohio 44131
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

July 10, 2018

Re: RCG File No: 53100075
LLV Number: 8203912
VMF Location: 2 South Avenue Youngstown, Ohio
Subject: Preliminary/Final Report

Dear

On June 4, 2018, a vehicle fire occurred at the US Post Office located at 7983 Dickey Road in Lisbon Ohio. On June 13, 2018, Rimkus Consulting Group, Inc. was retained to examine LLV 8203912, VIN 1GBBS10E4J2309128.

On June 19, 2018, we examined the fire damaged LLV at the USPS VMF located at 2 South Avenue in Youngstown, Ohio. Our work to complete this assignment was performed by Fire Consultant W. Timothy Spradlin, IAAI-CFI (V). This report was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire & Explosion Investigations".

Conclusions

1. The fire was determined to have originated within the engine compartment of the involved LLV on the top side of the engine at the carburetor.
2. The specific area of fire origin was determined to be on the top side of the engine at the carburetor.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of the improper use of starter fluid into the top of the carburetor.

Observations

Exterior Inspection:

The front grill, headlights and bumper were intact. The hood was melted and collapsed. The dash, driver side "A" post and roof were fire damaged and melted. Both front fender wells were fire damaged and melted. The left front tire was heat damaged and flattened. The cargo body was in good condition with smoke staining only. The driver side sliding door was heat damaged and deformed. The rear cargo rolling door was closed and locked. The mail side sliding door was intact in good condition. Fire damage patterns indicated a fire originating in the engine compartment and extending to the driver compartment.

Interior Inspection:

The driver section was severely fire damaged. All combustible components were consumed by fire. The dashboard was collapsed, with fire damaged electrical circuits suspended from the damage. The steering wheel was severely damaged, with the steering shaft disconnected and collapsed. The sliding door to the cargo area was intact. There was smoke staining inside the cargo area. The mail sorting table was intact with some minor heat damage and fire debris on top of it. The engine air cleaner cover was lying on the interior floor under the mail sorting table.

Engine Compartment Inspection:

The engine was severely fire damaged. The cover for the air cleaner had been removed. The insulation on the electric circuits and spark plug wires was consumed by fire. The flexible portion of the fuel filter system was consumed by fire. The battery had direct heat melt damage indicating exposure from the top of the engine block. The motor oil and transmission fluids were at normal levels. The radiator was heat damaged with no coolant due to damage. The underside of the engine compartment was undamaged.

Undercarriage Inspection:

The undercarriage was in good condition. There was no fire damage except solidified melted aluminum that had dripped down from the engine compartment during the fire. The drive train and exhaust system were in good condition. The wheel assemblies and braking systems were in good condition.

Fuse Panel Inspection:

The fuse panel was severely fire damaged in the driver side dashboard. The plastic body housing was melted, with fractured wiring and visible terminals. The individual fuses were consumed by fire.

Area of Fire Origin:

The area of fire origin was the top of the engine at the air cleaner and carburetor.

Potential Contributing Factors:

The improper use of starter fluid into the top of the carburetor was a contributing factor.

Interviews:

On June 19, 2018, we conducted a telephone interview with Ms. the postmaster at the Lisbon post office. She stated that on the date of the fire at approximately 11:00 A.M. she assisted carrier when LLV 8203912 would not start. She obtained the spray can of starter fluid from a closet in the post office. Ms. removed the air cleaner cover and sprayed starter fluid into the top of the carburetor. Ms. sat behind the wheel and operated the key for the starter. She said the vehicle battery was in good condition that the engine would crank but would not start. She said the engine started, and ran briefly but then died. She activated the key for the starter a second time. The engine started but there was a loud "pop" noise and flames with smoke emitted from the top of the engine. Ms. obtained a 10 pound ABC fire extinguisher from the post office interior. She discharged the extinguisher but said it only made the fire get bigger. Ms. removed the mail from the cargo compartment. They then evacuated the area, called 911 and waited for the Lisbon volunteer fire department to arrive. After the fire department put out the fire, Charlotte notified the Youngstown VMF. Charlotte was not sure when or where the starter fluid was obtained. She stated the subject LLV had problems starting in the past.

On June 19, 2018, we conducted an interview with the manager of the Youngstown VMF. He stated the vehicle was a 1998 LLV. He provided the last 12 months maintenance records. There were no repairs, only routine preventative maintenance. He stated there was no history of major problems or concerns with the fire damaged LLV. It was due for installation of a new frame. The VMF did not receive a service call from the Lisbon post office on the date of the fire. The VMF was notified at approximately 12:00 P.M. He stated that the use of starter fluid by field personnel was

not approved. He stated the VMF does not provide starter fluid nor teach field personnel to use it. The standard procedure when a vehicle will not start is to call the VMF for assistance.

Evidence Collected:

No evidence was collected.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records it was determined that none of the maintenance on the vehicle within the last year was performed on the fuel system or carburetor.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Spradlin

William T. Spradlin, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

July 10, 2018
RCG File No. 53100075

Photograph 1
Front of fire damaged LLV.



Photograph 2
Driver side with fire damage extension from the engine compartment.



July 10, 2018
RCG File No. 53100075

Photograph 3

Fire damage to driver compartment was extension of fire in engine compartment.



July 10, 2018
RCG File No. 53100075

Photograph 4

Fire damaged remains of fuse panel and dashboard.



Photograph 5

Rear of LLV with smoke staining on exterior.



July 10, 2018
RCG File No. 53100075

Photograph 6

Mail side of LLV with fire damage extension from the engine compartment.



Photograph 7

Mail side interior of LLV, air cleaner cover from engine compartment on floor.



July 10, 2018
RCG File No. 53100075

Photograph 8

Engine compartment was area of fire origin.



Photograph 9

Smoke staining only in cargo compartment, all mail had been removed.



July 10, 2018
RCG File No. 53100075

Photograph 10

Undercarriage was in good condition, exhaust system and drivetrain intact.



July 10, 2018
RCG File No. 53100075

CVs



**WILLIAM TIMOTHY SPRADLIN, IAAI-CFI, CI, FIT, NAFI-CFEI
Fire Consultant**

Mr. Tim Spradlin has over 35 years' experience in firefighting, law enforcement, fire, arson and bombing investigation. His fire / explosion investigation work spans over 20 years of service, and he has three related college degrees. His career includes work as a full-time fire lieutenant, captain, deputy chief and fire chief in Xenia Township, Ohio. Mr. Spradlin also served as a reserve deputy sheriff with the Greene County Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He retired from 32 years public safety work as the Chief of the State of Ohio Fire Marshal's Fire – Explosion Investigation Bureau. From January 2008 until September 2014 Mr. Spradlin was the full-time chief fire / arson investigator for Ohio. He was also the curriculum manager / instructor for the Ohio Fire Academy fire investigation programs.

Mr. Spradlin also served in the United States Air Force, where he served 4 years active duty and 26 years reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant / First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the US Army in 2007 for combat meritorious service.

He currently serves as a police officer in the Village of Yellow Springs and as a volunteer fire training officer with the Xenia Township Fire Department in Ohio. Mr. Spradlin also teaches in the Clark State Community College fire programs and the Sinclair Community College Basic Police Officer Training Academy.

Mr. Spradlin is a certified fire investigator (CFI), fire investigation technician (FIT) and certified instructor (CI) by the International Association of Arson Investigators (IAAI). He is also a certified fire explosion investigator (CFEI) by the National Association of Fire Investigators (NAFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Bachelor of Science Degree in *Organizational Management* from Wilberforce University, Xenia, Ohio
Associates Degree in *Human Resource Management*, Air University CCAF, Gunter AFS, Alabama
Associates Degree in *Fire Science Technology*, Air University CCAF, Gunter AFS, Alabama
National Fire Academy *Arson Interview, Interrogation and Courtroom Testimony* course
National Fire Academy *Executive Analysis of Fire Operations in Emergency Management*
National Fire Academy *Executive Development* Program
National Fire Academy *Executive Planning* Program
Ohio Fire Academy *Basic Fire Investigation* and *Advanced Fire Investigation* programs
USAFR *Senior NCO Leadership Development Course*, Robins AFB, Georgia
Sinclair Community College Criminal Justice Academy, Dayton, Ohio

Member of the International Association of Arson Investigators (IAAI) and of the Ohio Chapter IAAI
Member of the National Association of Fire Investigators (NAFI)
Member of the National Society of Professional Insurance Investigators (NSPII)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus North Carolina, PLLC
5900 Harris Technology Blvd, Suite P
Charlotte, NC 28269
(704) 896-6227 Telephone
(704) 896-6228 Facsimile
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2017

December 14, 2016

Re: RCG File No:

LLV Number: 47107526
VMF Location: 8204095
Subject: 4 Clingman Avenue in Asheville, North Carolina
Preliminary/Final Report

Dear

Rimkus North Carolina, PLLC was retained to examine the 1988 Chevrolet LLV 8204095, VIN 1GBBS10E9J2309416. The vehicle was examined at the USPS Asheville vehicle maintenance facility (VMF) located at 4 Clingman Avenue in Asheville, North Carolina. The fire incident reportedly occurred at 1685 North Canton Road in Canton, North Carolina on November 1, 2016.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on November 10, 2016. Our work to complete this assignment was performed by Fire Consultant David R. Meyers, IAAI-CFI. This report and case was reviewed by Technical Fire Manager Jack R. Kennedy, III, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at and around the battery positioned on the right side of the engine compartment at the terminal.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a loose connection that created a high-resistance connection that continued to generate heat until the plastic terminal components reached their ignition temperature at the positive connection terminal. The fire was contained to this area and was kept from spreading by the fire department.
4. Minimal damage will allow the LLV to be repaired and placed back in service.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. Minor smoke staining was visible on the right side of the hood below the windshield. All remaining sides of the vehicle sustained no fire damage. Body damage was observed to the left rear of the vehicle from a recent accident.

Interior Inspection:

Examination of the interior of the vehicle revealed no fire damage.

Engine Compartment Inspection:

The 2.5L gasoline engine compartment was examined. Fire damage was observed along the right side of the engine at the battery. Electrical wiring that transverses the area to the battery was observed with thermal fire damage only, thus eliminating them as a cause. The fuel system was examined and found to be intact with no damage noted. The fuel filter was intact and located along rear of the engine near the fire wall. The fuel system was the GM model. The carburetor was examined and observed with no fire damage. The exhaust system was examined and observed with no fire damage. Based on the fire patterns observed, the battery, at the battery terminal, within the engine compartment was determined to be the area of origin.

The battery for the vehicle was located at the front right side of the engine compartment and had moderate fire damage to the left side of the battery at the terminal connection points. The battery, the battery terminals and battery cables were examined and found to be damaged by thermal damage, adverse electrical activity was observed on the battery terminal connection bolt due to a high-resistance connection. The battery and the battery terminals were determined to be the cause of the fire.

Undercarriage Inspection:

Examination of the undercarriage revealed no damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the engine and transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed no fire damage and none of the fuses were observed blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment at the vehicle battery.

Potential Contributing Factors:

The LLV reportedly was being driven when the carrier observed smoke coming from under the hood. The vehicle was stopped at a volunteer fire department and the firefighters extinguished the fire. The fire was contained to the engine compartment. The only severe fire damage was to the battery, the battery cables and the battery terminals. The most severe fire damage was observed to the positive (+) terminal at the connection point. The terminal connection bolt was observed with adverse electrical activity to the bolt due to a loose connection creating a high-resistance connection that continued to generate heat until the plastic terminal components reached their ignition temperature.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

On November 10, 2016, an interview was conducted with USPS Supervisor at the Asheville vehicle maintenance facility (VMF). Mr. reported the following information:

- Mr. reported that the LLV was operating normally prior to the fire with no problems or issues.
- Mr. reported that the carrier was traveling his route when he observed smoke coming from the engine compartment. He stopped at the LLV in front of

a volunteer fire department and the firefighters extinguished the small fire in the engine compartment. The LLV was towed back to the Asheville VFM.

- Mr. reported that vehicle battery was approximately five (5) years old and no recent work or repairs had been done in the area of the battery or battery cables. A review of the maintenance records revealed normal preventive maintenance had been completed and the only recent work completed to the LLV was brake pads on September 29, 2016.
- Mr. reported that the LLV had been involved in a minor accident on October 29, 2016, three days prior to the fire. Minor damage to the left rear corner of the vehicle was observed.

Service Records:

A review of the service history for the involved LLV was conducted and there were no listed repairs or service that would have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NORTH CAROLINA, PLLC

David R. Meyers

David R. Meyers, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

December 14, 2016
RCG File No. 47107526

Photograph 1

1988 Chevrolet LLV 8204095, VIN: 1GBBS10E9J2309416.



Photograph 2

Observe no fire damage to the exterior of the engine compartment.



December 14, 2016
RCG File No. 47107526

Photograph 3

Rear of the vehicle; observe the minor damage to the left rear corner of the vehicle.



Photograph 4

No damage to the undercarriage of the vehicle.



December 14, 2016
RCG File No. 47107526

Photograph 5

No damage to the driver's compartment.



Photograph 6

No damage to the cargo area.



December 14, 2016
RCG File No. 47107526

Photograph 7

Engine compartment, observe the damage to the battery area.



Photograph 8

Observe the damage to the battery terminal area.



December 14, 2016
RCG File No. 47107526

Photograph 9

Observe the most severe damage to the battery terminal area.



Photograph 10

Observe the adverse electrical activity to the terminal bolt.



December 14, 2016
RCG File No. 47107526

CVs



DAVID R. MEYERS, IAAI-CFI FIRE CONSULTANT

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Kaplan University,
Bachelors in Fire Science, Current Student (2015 Graduation)

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
13900 Alton Pkwy., Suite 123
Irvine, CA 92618
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

October 26, 2017

Re: RCG File No:

71806351
USPS LLV Number: 8204334
VMF Location: 28201 Franklin Parkway Santa Clarita, California 91383
Subject: Preliminary/Final Report

Dear

On September 25, 2017, a fire occurred involving USPS LLV 8204334. The loss location was reported to be in a housing tract near the intersection of Seco Canyon Road and Bouquet Canyon Road in Santa Clarita, California. LLV 8204334 was examined at the VMF located at 28201 Franklin Parkway in Santa Clarita, California.

Rimkus Consulting Group, Inc. was retained to examine LLV 8204334, VIN 1GBBS10F2J2309757 to determine the cause of the fire. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver, and documented the vehicle with photographs. The vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on October 16, 2017. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated within the engine compartment of the involved LLV.
2. The specific area of origin was at and around a battery cable routed directly above the starter motor assembly that sustained an adverse electrical event.

3. The specific ignition sequence and cause of the fire was determined to be an adverse electrical event at the large diameter battery cable that was identified routed through a retaining clamp above the starter motor assembly. The cable exhibited physical evidence consistent with adverse electrical activity. The source of the fire's ignition was resistance heating of the battery cable caused by a direct short between the battery cables.
4. Wear and degradation of components allowed an unfused adverse electrical event to develop at the battery hot lead where it was in direct contact with the components of the engine compartment directly above the starter motor assembly.

Observations

Exterior Inspection:

The vehicle sustained severe fire damage to the engine compartment, with damage diminishing into the carrier compartment. Fire penetrated the bulkhead wall at the heater location, causing localized fire damage to the left front section of the carrier compartment.

The engine compartment hood exhibited fire and heat effects, slightly greater to the right side. Both fenders were intact but showed evidence of fire and heat within the engine compartment.

The windshield was cracked at the bottom center area from fire, heat and flame venting from a centered ventilation grill in front of the windshield.

The cargo compartment was intact.

The right and left front tires sustained minor heat exposure damage and retained air. The rear tires were intact.

Interior Inspection:

The carrier compartment was intact except at the front center/left bulkhead wall area where fire penetrated the bulkhead wall at the heater location. Minor to moderate smoke damage was observed in the carrier compartment.

Fire effects in the carrier compartment were contained to the center/left bulkhead area.

Engine Compartment Inspection:

The engine compartment combustible components were charred and/or consumed by the fire. The greatest damage was in the lower right side of the engine compartment.

Fire damage generally diminished slightly away from this area to the remainder of the engine compartment.

Evidence of electrical arcing was observed in the right side of the engine compartment at the battery cable positive lead and negative leads where the conductors contacted, approximately two to four inches above the starter motor assembly. This represented a potential source of ignition and was consistent with observations and sensations of the carrier/driver.

Additional arced wire harness conductors were observed above the arced battery cables.

Undercarriage Inspection:

No fire damage occurred to the undercarriage to the rear of the engine compartment.

There was no evidence of fire or fire origination at the undercarriage.

The LLV was manufactured in March, 1988, and utilized a General Motors chassis.

Fuse Panel Inspection:

The fuse panel sustained minor smoke damage but was intact.

Two fuses activated as follows:

- 10 amp, ECM I
- 3 amp, Crank

Area of Fire Origin:

The fire originated in the engine compartment, on the right side of the engine, where the battery leads shorted just above the starter motor assembly.

Contributing Factors:

Normal wear and degradation of the components located within the area of origin including potential abrasion to the battery's positive and negative cables where they were in direct contact with the engine compartment components could be a contributing factor. Circumstances and witness observations indicate an adverse electrical event involving the battery cables was the primary contributing factor.

Evidence Collected:

No evidence was collected.

Service Records:

A review of the provided service records for the involved LLV was conducted. The last scheduled service was completed on September 13, 2017. After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Interview:

Ms. , carrier/driver, United States Postal Service, provided the following information:

- At the time of the fire, she was operating the vehicle, driving on her assigned delivery route in a residential tract.
- The LLV was running normally, with no indication of a problem.
- All of a sudden the LLV lurched and lunged, and the engine died in front of a driveway. She was not certain of the address, but it may have been 22764 Rio Bosque Drive.
- She waited about one minute, then restarted the engine, backed away from the driveway, and the engine died again.
- She called her supervisor to report the problem, and about that time a customer came over from the next house and said there was smoke coming from the vehicle.
- She got out and then saw there was sparks or flames coming from the LLV in the engine area, but she could not identify the specific location, and it seemed like smoke was coming out from the front of the vehicle.
- She was still on the phone with her supervisor who told her to call 911.
- At that time, the customer's son came over with a fire extinguisher and used it, but the smoke and fire did not stop. They did not open the hood during the incident, but the fire department did when they arrived.

- She recalled that during the fire, the engine starter motor came on a couple times all by itself, even though she had the key with her.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

October 26, 2017
RCG File No. 71806351

Photograph 1
LLV 8204334.



Photograph 2
Engine compartment. Note fire patterns on hood, top.



Photograph 3

Positive and negative battery cable leads contacted and arced, yellow circle.



Photograph 4

Positive and negative battery cable leads removed for inspection. Note arcing.



October 26, 2017
RCG File No. 71806351

Photograph 5

Adverse electrical activity observed on the wiring harness.



Photograph 6

Rear of the vehicle .



October 26, 2017
RCG File No. 71806351

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
3620 Horizon Drive, Suite 200
King of Prussia, PA 19406
(888) 623-1460 Telephone
(610) 941-1288 Facsimile

May 9, 2016

Re: RCG File No: 47701868
LLV Number: 8204685
VMF Location: 194 Ward Street in Patterson, New Jersey
Subject: Final Report

Rimkus Consulting Group, Inc. was requested to examine LLV 8204685, VIN 1GBBS10E9J2309948. The vehicle was examined at the USPS Patterson Vehicle Maintenance Facility located at 194 Ward Street in Patterson, New Jersey. The fire incident reportedly occurred at 9 Butternut Drive in Vernon, New Jersey on March 3, 2016.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on March 10, 2016. Our work to complete this assignment was performed by Fire Consultant Jonathan Sivils, IAAI-CFI. This report and case was reviewed by Mr. Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. After an examination of the involved LLV, the fire was determined to have originated in the engine compartment.
2. The specific area of fire origin within the engine compartment was determined to be at and around the starter.

3. The specific ignition sequence and cause of the fire was determined to be an adverse electrical event that occurred involving the positive electrical conductor to the starter which arced to the metal frame in the area of fire origin.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. Severe fire damage was observed to the front of the vehicle. The hood and roof along the front were consumed. All of the window glass in the vehicle was broken. The roof along the rear was intact. The front tires were burned while the other rear tires remained intact.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred to the front dashboard area. The dashboard had melted and the majority of the electrical wiring and other components that were housed within the dashboard were severely damaged. The electrical wiring that could be examined did not display any physical evidence of adverse electrical activity.

Engine Compartment Inspection:

The engine compartment was examined. Flame damage was observed throughout the engine compartment with the most severe damage in the compartment located along the rear of the engine, closest to the firewall on the right side. The plastic and rubber engine components were consumed. The air filter components were also consumed.

The fuel system was examined and was revealed to be the original GM fuel filter system which was severely damaged. The fuel lines were routed along the rear of the engine. The fuel filter was located just to the rear of the engine on the left side. The filter was intact but all fuel lines to the engine were consumed. The battery for the vehicle was located at the front right side of the engine compartment and had sustained severe fire damage and was nearly consumed. All battery cables remained intact with no signs of adverse electrical activity. The starter was examined and found to be intact. The electrical conductors for the starter revealed they were broken near the frame of the vehicle and showed physical evidence of adverse electrical activity at the break.

Undercarriage Inspection:

Examination of the undercarriage revealed only distortion to the paint closer to the front, indicating heat travel from the engine compartment area or front of vehicle. The LLV

was mounted on a GM frame. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

AN examination of the fuel panel was attempted, however it had sustained severe fire damage and we could not conclusively identify the condition of the fuses.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage, witness statements and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment of the vehicle near the starter. The specific ignition sequence and cause of the fire was an electrical event that occurred in the conductor for the starter that came in contact with the metal frame.

Contributing Factors:

A new starter was installed on this vehicle in June 2015, September 2015, and February 2016.

Evidence Collected:

Vehicle starter and associated electrical wires were collected and shipped to the Charlotte office for examination.

Examination of the collected evidence indicated a failure in the positive electrical conductor to the starter which arced to the frame and ignited available combustible materials.

Interviews:

On March 10, 2016, an interview was conducted with the driver of the vehicle. He reported the following information:

- On the day of the fire at approximately 1:30 p.m., he pulled into 9 Butternut Drive in Vernon, New Jersey to make a delivery and the vehicle stalled.
- He attempted to start the vehicle but it kept stalling.
- He called the Post Office for a tow truck and replacement vehicle.
- He attempted to start the vehicle again and a buzzer went off.
- He then smelled something burning.

- He opened the hood to see what was burning and saw fire along the frame on the driver's side.
- He immediately went to the customers home to have them call 911, but no one was home. He then called 911.
- After calling 911, he secured the mail.
- He said the truck was fully involved within 15 minutes.
- No other issues or problems were reported with the vehicle on the day of the fire.

Service Records:

A review of the work order history for the involved LLV indicated that the starter had been replaced on the vehicle on three separate occasions. The last new starter was placed in the vehicle on February 5, 2016 by a third party identified as A-TECH Tire & Auto center.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jonathan K. Sivils

Jonathan K. Sivils, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

May 9, 2016
RCG File No. 47701868

Photograph 1
Right front of vehicle.



Photograph 2
Right rear side.



May 9, 2016
RCG File No. 47701868

Photograph 3
Rear of vehicle.



Photograph 4
Left rear side of vehicle.



May 9, 2016
RCG File No. 47701868

Photograph 5

Left front side of vehicle.



Photograph 6

Right side interior.



May 9, 2016
RCG File No. 47701868

Photograph 7
Engine compartment.



Photograph 8
Fuel filter.



May 9, 2016
RCG File No. 47701868

Photograph 9
Starter.



Photograph 10
Starter.



Photograph 11
Starter from under vehicle.



Photograph 12
Electrical conductors for starter.



Photograph 13

Starter removed for examination.



Photograph 14

Starter removed for examination. Wire broken.



May 9, 2016
RCG File No. 47701868

Photograph 15

Closer view of wire for starter.



Photograph 16

Starter and wiring, collected for evidence.



May 9, 2016
RCG File No. 47701868

CVs



Jonathan Sivils, IAAI-CFI, FIT, CFEI Fire Consultant

Mr. Sivils is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, as well as a Fire Investigation Technician (IAAI-FIT) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). He also holds an Associate of Science Degree in Fire Protection Technology. In a career spanning more than 25 years in the fire service, he has investigated and determined the origin and cause of more than 800 fires, to include commercial structures, residential structures, vehicles, marine and heavy equipment. He has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Sivils is a court-qualified expert witness in Criminal and Civil proceedings. Mr. Sivils has extensive training in fire and criminal investigations.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S Fire Protection Technology – Americus University, Washington D.C. – 2002
Bucks County Fire Chiefs and Firefighters Association
Bucks County Fire Marshal Association
International Association of Arson Investigators
National Association of Fire Investigators
National Fire Protection Association
Pennsylvania Association of Arson Investigators

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2012 – 2015	Donan Engineering Company, Inc.
2007 – 2012	Bucks county Fire Marshal Office, Bucks County, Pa
2005 – 2007	U.S. Department Of Defense Fire and Emergency Services
2009 – 2010	NEFCO Fire Investigations, Philadelphia, Pa
2003 – 2005	U.S. Department of Homeland Security
1998 – 2003	U.S. Department Of Defense Fire and Emergency Services
1993 – 2010	Penndel Fire Company, Penndel, Pa



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

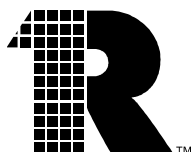
Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
13900 Alton Pkwy., Suite 123
Irvine, California 92618
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

February 23, 2018

Re: RCG File No: 71806589
USPS LLV Number: 8205976
VMF Location: 489 N. Fair Oaks Avenue, Pasadena, California 91103
Subject: Preliminary/Final Report

Dear

On January 22, 2018, a fire occurred involving USPS LLV 8205976. The loss location was reported as 4761 N. Figueroa Street, Los Angeles, California. LLV 8205976 was examined at the VMF located at 489 N. Fair Oaks Avenue in Pasadena, California.

Rimkus Consulting Group, Inc. was retained to examine LLV 8205976, VIN 1GBBS10E7J2311293 to determine the cause of the fire. During our investigation, we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver, and documented the vehicle with photographs. In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on January 31, 2018. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the top side of the engine at the carburetor and air filter location.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of ignition of either leaking or atomized gasoline vapor coming in contact with a competent ignition source, possibly an engine backfire, in the immediate vicinity of, or within, the air filter canister.

Observations

Exterior Inspection:

The vehicle sustained no visible fire damage with the exception for a slight, circular shaped paint discoloration pattern approximately ten inches in diameter, at the rear of the engine compartment hood, directly above the engine air filter canister.

Light smoke residue appeared on the windshield adjacent the hood heat pattern.

Interior Inspection:

The carrier compartment was intact with no visible evidence of fire effects. The rear mail compartment was intact with no visible evidence of fire effects.

Engine Compartment Inspection:

The engine compartment sustained localized fire effects at the metal engine air filter canister, where the air filter element was charred and upper and lower rubber element sealing gaskets were charred and melted inside the canister.

Fire effects were visible around the exterior of the air filter canister where flames exited canister openings, and consumed plastic wire harness insulation material at the front of the canister. Plastic components attached to the canister were likewise charred or consumed.

Fire heat effects were evident around the immediate circumference of the air filter canister and underside of the engine compartment hood.

Fire effect diminished in an orderly fashion away from the engine air filter canister.

Undercarriage Inspection:

No fire damage or effects were visible to the undercarriage.

The LLV was manufactured in March, 1988, and utilized a General Motors chassis.

Fuse Panel Inspection:

The fuse panel was inspected and all fuses were intact.

Area of Fire Origin:

The fire originated in the engine compartment, inside the engine air filter canister.

Contributing Factors:

Normal wear and degradation of the components located within the area of origin including a malfunctioning throttle body fuel injector or worn/leaking throttle body fuel diaphragm.

Evidence Collected:

Throttle body fuel injector and throttle body fuel diaphragm.

Interview:

Mr. , carrier/driver, provided the following information:

- Mr. began his route at approximately 10:15 A.M., and the fire occurred approximately 45 minutes later.
- It took two attempts to start the LLV when beginning his route, but then it ran normally with no indication of a problem until just before the fire.
- He was driving slightly uphill when the engine stuttered and then stalled.
- He tried to re-start the engine without success. He then called his manager who was going to send assistance.

- He then gathered some mail and walked up the street to make deliveries. He returned approximately five minutes late and saw white smoke coming from the hood near the windshield.
- He called his manager again and advised of the problem, and then removed the mail from the LLV. By that time, there were flames and black smoke visible at the hood area near the windshield.
- Fortunately, a trash truck came by and the driver used his fire extinguisher to put the fire out.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records it was determined that no maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated other than air filter element replacement.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

February 23, 2018
RCG File No. 71806351

Photograph 1

LLV 8205976, Heat mark on hood, yellow arrow.



Photograph 2

Engine compartment. Air filter canister, left side.



Photograph 3

Throttle body injector location.



Photograph 4

Diaphragm, left; Throttle body injector, right.



February 23, 2018
RCG File No. 71806351

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
921 Eastwind Drive, Suite 110
Westerville, Ohio 43081
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

November 8, 2017

Re: RCG File No: 53602932
LLV#: 8206407
VMF: 2801 Niles Road SE Warren, Ohio
Subject: Preliminary/Final Report

On October 19, 2017, a fire occurred in a USPS LLV truck. On October 23, 2017, Rimkus Consulting Group, Inc. was retained to examine LLV 8206407, VIN 1GBBS10EXJ2311711. On October 25, 2017, we conducted our investigation at the Warren Aux VMF located at 2801 Niles Road SE in Warren, Ohio.

Our work to complete this assignment was performed by W. Timothy Spradlin, IAAI-CFI. In the course of our work, we inspected the vehicle, photographed the vehicle and reviewed the repair and maintenance orders. This report was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire & Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the vehicle.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of an engine fluid leak (IE: fuel, oil, transmission fluid) onto a hot engine surface as the possible cause of the fire.

Observations

Exterior Inspection:

We began at the front of the vehicle and conducted a clockwise examination of the exterior. The front grill and headlights were intact. There was smoke staining on the grill. The left front mail side corner fender was fire damaged and deformed by fire. The driver side fender was fire damaged; the paint was consumed by fire. The hood was removed and laying in the cargo compartment. We reconstructed the hood, laying it in place on the fenders. The left mail side of the hood was melted and consumed by fire above the left side of the engine compartment. The A posts and dash were consumed by fire and collapsed into the cab. The driver compartment roof was consumed by fire and collapsed. The cargo area roof was partially collapsed.

Fire damage patterns on the driver side indicated fire extension from a fire in the engine compartment. The cargo area rear door was heat damaged and collapsed into the cargo area. The upper tail lights and turn signals were melted and collapsed into the interior. The lower tail lights were intact. The cargo area interior was fire damaged but there was no fire debris, indicating cargo was not in the fire.

The mail side exterior surfaces indicated fire extension from the engine compartment. All 4 tires were inflated and intact and undamaged at the time of the inspection. The left front tire had been changed by VMF staff after the fire to facilitate movement of the truck. The left front mail side tire was nearby; it was flattened with heavy fire damage and part of the inside of tire consumed by fire.

Interior Inspection:

The interior driver compartment was consumed by fire with all combustibles melted or collapsed onto the floor. The electrical system and fuse panel were completely consumed by fire and collapsed. The dashboard was collapsed and electrical circuits

fractured within that area. The mail side aluminum sorting table was partially consumed, melted, and collapsed onto the floor.

Engine Compartment Inspection:

The engine was a 2.5 liter with fuel injection and standard coil ignition. The engine compartment and components were heavily damaged by fire. All combustible components were heavily fire-damaged and charred. The battery plastic casing was melted. Battery damage indicated heat exposure from the left mail side of the engine compartment. Oxidation patterns on the air cleaner indicated heat from the left mail side of the engine compartment. The radiator hoses were charred and deformed by fire exposure. The aluminum inner fender well of the left mail side was fire damaged and partially consumed.

Fire patterns indicated fire and heat extension from the left side of the engine compartment. The aluminum bulkhead wall was consumed and collapsed on the mail side. The rubber connecting hoses between the gas line, the fuel filter and the return line on the left side of the engine were consumed by fire. The oil and transmission fluids were examined and within normal ranges with normal odors. The plastic brake fluid reservoir and power steering fluid reservoir were melted and heat damaged. There was no evidence of oil or combustible fluid leaks.

Undercarriage Inspection:

The undercarriage was in good condition with all components intact. The frame was a GM frame, it was scheduled for replacement. The exhaust system, fuel tank, and suspension were intact in good condition. There was no excessive oil or grease observed on undercarriage surfaces.

Fuse Panel Inspection:

The fuse panel and bulkhead wall were completely consumed by fire and collapsed, the circuits were intact with blades attached. All plastic components of the fuse panel were consumed by fire.

Area of Fire Origin:

The fire originated in the left / mail side of the engine compartment.

Contributing Factors:

Based on the observed pattern of fire damage, the data collected and a systematic evaluation of the remaining physical evidence, within a reasonable degree of fire science certainty, the fire originated in the left/mail side of the engine compartment. We could not eliminate a failure of the fuel line system as a cause of the fire. We could not eliminate the electrical arc ignition of gasoline vapors leaking from the fuel system.

Evidence Collected:

No evidence was collected.

Interview:

On October 25, 2017, we conducted a telephone interview with the driver/carrier. She stated she has driven the truck before and had no problems. On the date of the fire, she had been on her route for approximately 3 hours. There were no problems, no smells, and no unusual sounds. The truck was running good; engine was smooth with no missing. She was delivering to rural route boxes.

As she accelerated away from a box, the engine stalled. When she tried to restart the engine, smoke came up from the dash on the left mail side of the truck. She got out and a passerby told her there was fire under the truck. She looked underneath and saw flames dropping down from the left mail side of the engine compartment. She called 911 and her supervisor. She opened the rear cargo door and removed the mail. She was able to remove the mail before the fire spread into the driver compartment and cargo area.

Service Records:

On October 25, 2017, we interviewed the Warren Aux VMF lead mechanic. He provided the maintenance records for the past year. The LLV had preventative maintenance on June 29, 2017. The LLV was in the VMF on October 17, 2017. They diagnosed and tested a bad battery. They replaced the battery at that time.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to

us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

William T. Spradlin

William T. Spradlin, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers
Technical Fire Manager

Attachments: Photographs, CVs

November 8, 2017
RCG File No. 53602932

Photograph 1
Front of LLV.



Photograph 2
Driver side.



November 8, 2017
RCG File No. 53602932

Photograph 3
Rear and mail side.



Photograph 4
Front and mail side.



November 8, 2017
RCG File No. 53602932

Photograph 5
Cargo area.



Photograph 6
Hood reconstructed in place over engine compartment.



November 8, 2017
RCG File No. 53602932

Photograph 7
Driver compartment.



Photograph 8
Remains of fuse panel.



November 8, 2017
RCG File No. 53602932

Photograph 9
Engine compartment.



Photograph 10
Undercarriage.



November 8, 2017
RCG File No. 53602932

Photograph 11
Left front tire.



Photograph 12
Area of fire origin left side of engine compartment near fuel lines and filter.



November 8, 2017
RCG File No. 53602932

CVs



**WILLIAM TIMOTHY SPRADLIN, IAAI-CFI, CI, FIT, NAFI-CFEI
Fire Consultant**

Mr. Tim Spradlin has over 35 years' experience in firefighting, law enforcement, fire, arson and bombing investigation. His fire / explosion investigation work spans over 20 years of service, and he has three related college degrees. His career includes work as a full-time fire lieutenant, captain, deputy chief and fire chief in Xenia Township, Ohio. Mr. Spradlin also served as a reserve deputy sheriff with the Greene County Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He retired from 32 years public safety work as the Chief of the State of Ohio Fire Marshal's Fire – Explosion Investigation Bureau. From January 2008 until September 2014 Mr. Spradlin was the full-time chief fire / arson investigator for Ohio. He was also the curriculum manager / instructor for the Ohio Fire Academy fire investigation programs.

Mr. Spradlin also served in the United States Air Force, where he served 4 years active duty and 26 years reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant / First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the US Army in 2007 for combat meritorious service.

He currently serves as a police officer in the Village of Yellow Springs and as a volunteer fire training officer with the Xenia Township Fire Department in Ohio. Mr. Spradlin also teaches in the Clark State Community College fire programs and the Sinclair Community College Basic Police Officer Training Academy.

Mr. Spradlin is a certified fire investigator (CFI), fire investigation technician (FIT) and certified instructor (CI) by the International Association of Arson Investigators (IAAI). He is also a certified fire explosion investigator (CFEI) by the National Association of Fire Investigators (NAFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Bachelor of Science Degree in *Organizational Management* from Wilberforce University, Xenia, Ohio
Associates Degree in *Human Resource Management*, Air University CCAF, Gunter AFS, Alabama
Associates Degree in *Fire Science Technology*, Air University CCAF, Gunter AFS, Alabama
National Fire Academy *Arson Interview, Interrogation and Courtroom Testimony* course
National Fire Academy *Executive Analysis of Fire Operations in Emergency Management*
National Fire Academy *Executive Development* Program
National Fire Academy *Executive Planning* Program
Ohio Fire Academy *Basic Fire Investigation* and *Advanced Fire Investigation* programs
USAFR *Senior NCO Leadership Development Course*, Robins AFB, Georgia
Sinclair Community College Criminal Justice Academy, Dayton, Ohio

Member of the International Association of Arson Investigators (IAAI) and of the Ohio Chapter IAAI
Member of the National Association of Fire Investigators (NAFI)
Member of the National Society of Professional Insurance Investigators (NSPII)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2677 North Main Street., Suite 300
Santa Ana, CA 92705
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

June 15, 2016

Re: RCG File No: 71804770
LLV Number: 8206618
VMF Location: 489 North Fair Oaks Avenue in Pasadena, California
Subject: Final Report

On March 31, 2016, a fire occurred involving USPS LLV 8206618. The loss location was reported as 7320 Figueroa Boulevard in Los Angeles, California. LLV 8206618 was examined at the Vehicle Maintenance Facility located at 489 North Fair Oaks Avenue in Pasadena, California.

Rimkus Consulting Group, Inc. was retained to examine LLV 8206618, VIN 1GBBS10E3J2311968, to determine the cause of the fire. This report was reviewed by Jack R. Kennedy III, Technical Fire Manager.

In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on April 12, 2016. During our investigation, we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver and documented the vehicle with photographs.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The involved LLV sustained moderate fire damage in the engine compartment before it was extinguished with a fire extinguisher.
2. The area of fire origin was determined to be within the engine compartment on the forward left side at and around the fuel filter location.

3. The specific ignition sequence and cause of the fire was determined to be the result of the front fuel line retention nut becoming loose which allowed gasoline to leak and vapors produced to be ignited by the hot surface of the operating engine components.

Observations

Exterior Inspection:

No exterior fire damage to the vehicle was observed. The right side of the engine compartment hood was bent slightly upward, indicating forced entry by the firefighters to the engine compartment.

Interior Inspection:

No interior fire damage was observed in the driver or cargo areas.

Engine Compartment Inspection:

The engine compartment was fire damaged in a localized area at the left front section, corresponding with soot accumulation to the underside of the hood. Heat effects and soot accumulation diminished towards the right side and rear of the engine compartment.

Dry chemical extinguishing agent remained in the engine compartment, consistent with the carrier's statement the fire was quickly extinguished by individuals from a nearby business.

Fire damage in the engine compartment was primarily superficial, causing melting and surface charring to plastic components. The most notable being the left side of the radiator fan shroud and plastic air intake tube. Electrical wire harness and conductor insulation was superficially scorched.

The engine fuel delivery system was modified from the original with a Wheeler Brothers Fuel System. This modification placed the fuel filter and high pressure supply line at the left front section of the engine compartment. Examination of the fuel system indicated the rigid metal fuel line attached to the front of the fuel filter was loose. The fuel line retention nut was easily turned by hand. In contrast, the rear fuel line retention nut remained tight and could not be manually manipulated.

Undercarriage Inspection:

No fire damage was observed to the undercarriage with the exception of the area below the left front portion of the engine compartment where soot accumulation and molten plastic components appeared. The LLV was mounted on a GM frame.

Fuse Panel Inspection:

All fuses were found to be intact.

Area of Fire Origin:

The fire originated in the engine compartment on the forward left side at the fuel filter location.

Contributing Factors:

Engine vibration caused the front fuel line retention nut to loosen at the fuel filter. The filter was mounted on an approximately 6 inch long bracket, which was attached to the power steering pump bracket. The approximately 15 inch long rigid fuel line section attached to the front side of the fuel filter provided leverage during vibration cycles sufficient to loosen the retention nut over time.

Fuel leaking at the fuel line connection generated sufficient vapor to be ignited by an available ignition source.

Evidence Collected:

There was no evidence collected for laboratory analysis.

Interview:

Carrier for USPS, provided the following information:

- She had been driving this LLV for approximately 4 years.
- The LLV seemed to be running fine that day.
- She was driving near Stater Road when she smelled something unusual, "like bus fumes or something" but she kept driving.
- A few minutes later, the engine stopped while she was in the left lane, in the middle of the road.
- She tried to restart the engine, but it would not get going. She "pumped it" (throttle) and kept trying to get it started, then there was a big "boom."
- Instantly, flames came out of the left side of the hood.
- She was "shocked" and immediately jumped out onto the street.

- Some guys at the car wash saw what happened and quickly ran over to the LLV and put out the fire.

Service Records:

A review of the service records was completed and there were no indications that work completed recently on the LLV would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

June 15, 2016
RCG File No. 71804770

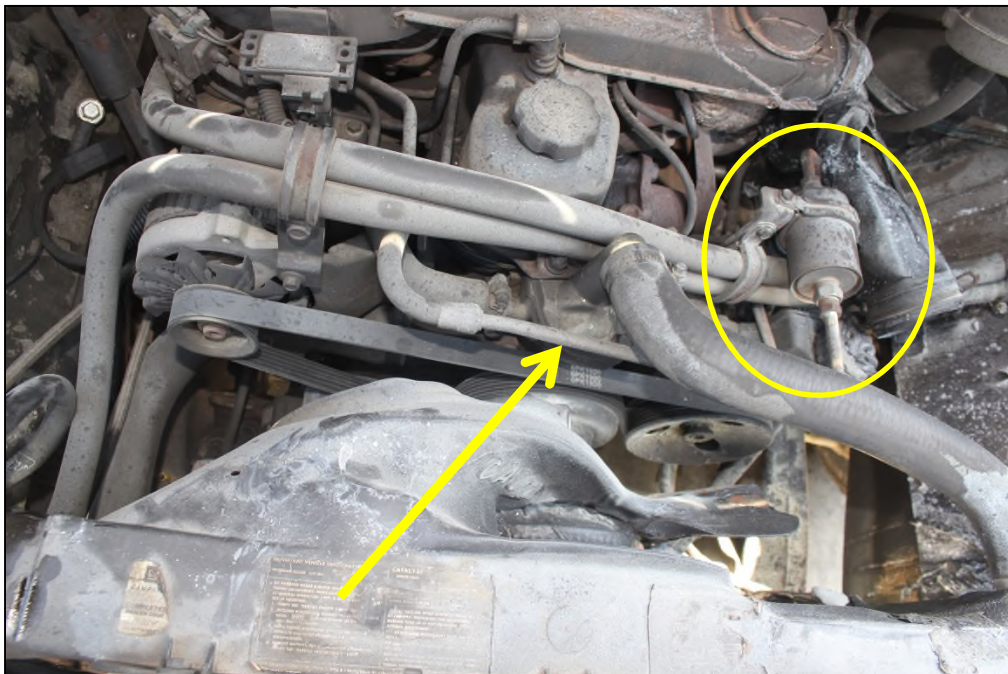
Photograph 1

LLV 8206618, foreground.



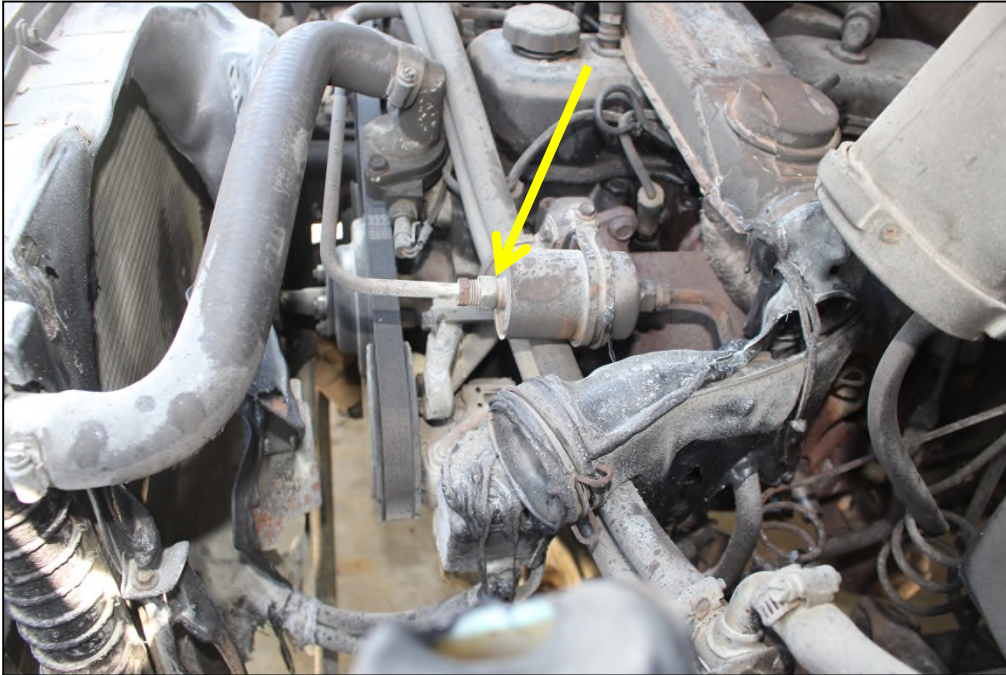
Photograph 2

Engine compartment. Fuel Filter, yellow circle. Rigid fuel line, yellow arrow.



Photograph 3

View of origin area. Front fuel line retention nut, yellow arrow.



Photograph 4

Closer view of loosened fuel line retention nut indicated by pen.



June 15, 2016
RCG File No. 71804770

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

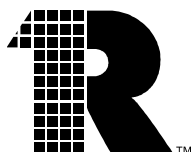
Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
13900 Alton Parkway Suite 123
Irvine, California 92618
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

July 10, 2018

Re: RCG File No: 71806880
LLV Number: 8206881
VMF Location: 701 North Loara Street in Anaheim, California
Subject: Preliminary/Final Report

Dear

On May 23, 2018, a fire involving USPS LLV 8206881 reportedly occurred during the delivery route at the address of 20270 Trentino Lane in Yorba Linda, California. The vehicle was manufactured by Grumman in 1988, model LLV-A.

Rimkus Consulting Group, Inc. was retained to examine LLV 8206881, VIN 1GBBS10E5J2312152 at the VMF located at 701 N. Loara Street in Anaheim, California. In the course of our work, we inspected and photographed the LLV and reviewed the vehicle repair and maintenance orders on May 30, 2018. The vehicle examination was conducted by Fire Consultant Gerard Kenny, IAAI-CFI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The vehicle sustained moderate to severe fire damage to the engine and driver's compartment from the fire originating within the engine compartment.

2. The area of origin was determined to have been on the driver's side of the engine compartment, adjacent to the 2.5 liter, L-4 engine and in the area where the coolant hose extends out from the radiator.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of an unspecified failure of the coolant line, causing atomized coolant to contact the hot engine surface. The atomized coolant ignited on the hot surface and spread to adjacent combustible materials.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. Severe fire damage was observed to the engine compartment of the vehicle. The doors to the driver's compartment had fire and smoke damage which was caused by the fire which originated in the engine compartment. The front of the vehicle had sustained severe fire damage. All of the cover for the engine compartment had been consumed by the fire as well as the radiator. The bulkhead between the engine compartment and the mail compartment was observed with severe mass loss. The front grill and lights of the LLV were consumed by the fire.

Minor heat damage was observed to the cargo area. The aluminum roof of the vehicle that covered the operator's compartment had a large hole over the driver's seat area that melted as a result of the fire. The front fenders were observed with severe fire damage. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The front tires were fire damaged causing them to expel all of their air. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

During the examination of the interior, we observed severe fire damage to the interior operator cab compartment, and minor damage to the rear cargo compartment. Fire patterns indicated the fire entered the cargo compartment through the center opening from the operator's compartment. Moderate fire damage was observed along the ceiling and upper side walls of the cargo space.

Observations of the fire patterns inside the cargo area confirmed that the rear cargo door had been in the closed position at the time of the fire. Some burned remnants of mail were observed still inside the cargo area.

An analysis of the fire patterns on the interior of the vehicle indicated that the fire extended into this area from the engine compartment through manufactured openings in the bulkhead. There was no physical evidence observed that would have indicated that the fire originated in the interior of the vehicle.

Engine Compartment Inspection:

Severe fire damage was observed throughout the engine compartment. The vehicle was equipped with a GM 2.5L, four-cylinder gasoline engine. The majority of the combustible material (hoses, belts, electrical wiring insulation, etc.) had been consumed in the fire. The oil dipstick was still present, and when examined it showed that the oil level was within normal limits. Examination of the remaining electrical wiring revealed severe fire damage to the wiring. An electrical arc site was observed at a P-clamp on the driver's side of the engine. One of the electrical battery conductors was welded to the P-clamp. This damage was most likely caused by the fire which originated on the driver's side of the engine.

The most severe fire damage had occurred on the driver's side of the engine block towards the front of the engine. Observations of the fire patterns in this area indicated that this was the area of fire origin. Fire patterns indicated the fire traveled from this area towards the bulkhead where it then extended into the driver's side of the operator's compartment.

Undercarriage Inspection:

Examination of the undercarriage revealed severe fire damage in the area of the engine compartment. No fire damage was observed to the rear areas of the undercarriage. The exhaust system was intact and the transmission did not reveal any leaks or failures. The LLV was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel positioned behind the instrument panel in the dashboard sustained severe fire damage. However, no evidence of adverse electrical activity was noted. The respective wiring harness associated with the fuse panel was inspected and did not reveal any unexpected damages from a fire with this intensity.

Area of Fire Origin:

It is our opinion, based on observations of the fire patterns within the vehicle and after a systematic evaluation of the remaining physical evidence, that this fire originated within the engine compartment on the driver's side of the engine where the coolant hoses were located. The coolant hoses had been consumed by the fire. This fire was caused by atomized coolant ignited by the hot surface of the engine and spread to adjacent combustible materials.

Potential Contributing Factors:

A potential contributing factor to the cause of the fire was a leaking coolant hose with the engine compartment.

Evidence Collected:

There was no physical evidence collected at the time of the LLV examination.

Interviews:

A phone interview was conducted with the mail carrier. Ms. stated that she had been driving the vehicle for approximately five hours with no problems. She delivered a package to the address listed above and transferred mail from the rear of the vehicle to the mail carrier section of the operator compartment. She stated the engine had been off for approximately five minutes. She stated that when she got back in the vehicle and started it up, she smelled anti-freeze. She stated that a passing USPS carrier noticed smoke coming from the engine and fire dropping from underneath on the driver side. Mr. stopped and helped Ms. remove the mail from the rear of the vehicle. She stated that the initial color of smoke from the fire was white.

Service Records:

A review of the USPS service records indicated that various repairs were made to this vehicle in February, March, April and May of 2018. Most repairs were electrical, and fuel related. There are no indications that any work was performed on the coolant system.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gerard A. Kenny

Gerard A. Kenny, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

July 10, 2018
RCG File No. 71806880

Photograph 1
Front of vehicle.



Photograph 2
Mail side of vehicle.



July 10, 2018
RCG File No. 71806880

Photograph 3
Cargo area of vehicle.



Photograph 4
Operator compartment.



July 10, 2018
RCG File No. 71806880

Photograph 5
View of the undercarriage.

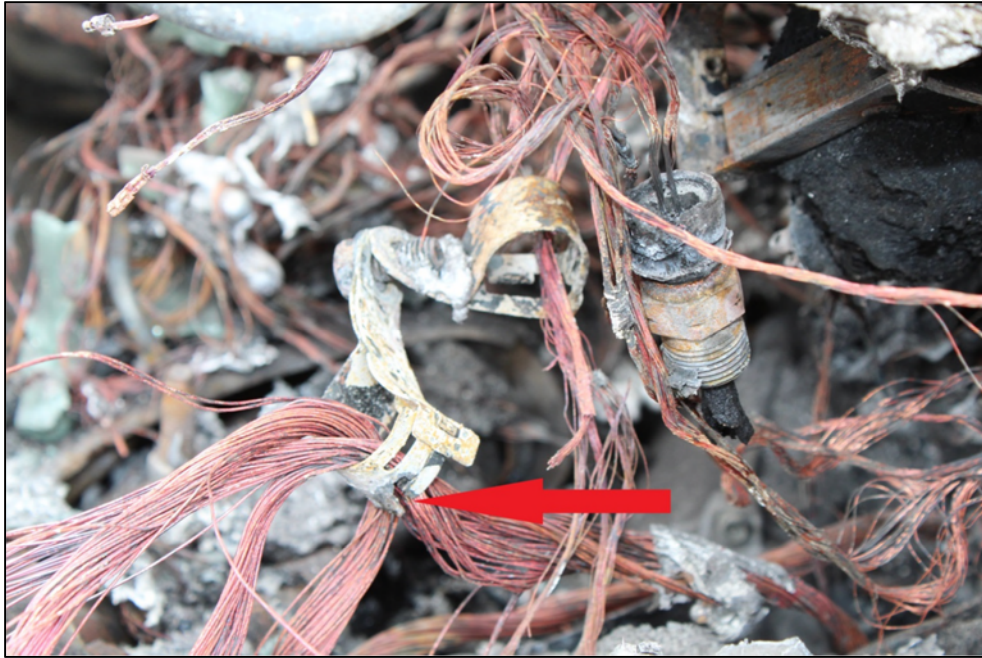


Photograph 6
Area of fire origin (red circle).



July 10, 2018
RCG File No. 71806880

Photograph 6
Arc site on battery conductor.



July 10, 2018
RCG File No. 71806880

CVs



GERARD A. KENNY, IAAI-CFI, NAFI-CFEI FIRE CONSULTANT

Mr. Kenny is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and Certified Fire and Explosion Investigator (NAFI-CFEI) with the National Association of Fire Investigators.

He received a National Certificate in Industrial Engineering from Regional Technical College in Galway, Ireland. Mr. Kenny has personally worked over 1,300 fire and explosion investigations. Mr. Kenny has acted as an expert witness and is licensed as a Private Investigator in CA, OR and WA. His forensic experience includes investigations of fire and explosion incidents in industrial, commercial, residential structures, vehicle, boats/vessels, and marinas. His areas of expertise include fire scene analysis, evidence, data collection, monitoring of destructive and non-destructive testing, investigative interviews, scene photography, and ICC and NFPA fire code compliance.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

International Association of Arson Investigators (IAAI)- Certified Fire Investigator
Certified Fire and Explosion Investigator (CFEI) - National Association of Fire Investigators
Special Commission Fire/Arson Investigator King County Sheriff's Office, Seattle, Washington
Basic Law Enforcement Academy at Washington State Criminal Justice Training Center
Illinois State Fire Marshal Fire/Arson Investigator Certification.
Emergency Medical Technician-Basic Certification, Chicago, Illinois
Firefighter II Certification, Chicago Fire Academy, Chicago, Illinois
Regional Technical College National Certificate in Industrial Engineering, Galway, Ireland

EMPLOYMENT HISTORY

2017 – Present	Rimkus Consulting Group
2015 – 2017	Envista Forensic Consulting Services
2007 – 2015	King County Sheriff's Office, Seattle, WA
2004 – 2007	Rayburn Fire Scene Investigations
1996 – 2007	Chicago Fire Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
7501 South Quincy Street, Suite 160
Willowbrook, IL 60527
(866) 746-5871 Telephone
(630) 321-1847 Facsimile

April 25, 2017

Re: RCG File No:

LLV Number: 50904605
VMF Location: 8206939
Subject: 341 West St. Paul Avenue in Milwaukee, Wisconsin
Preliminary/Final Report

Dear

On April 1, 2017, a fire occurred in a US Postal Service vehicle at 120304 West Cleveland Avenue in New Berlin, Wisconsin. On April 4, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1992 Grumman LLV 8206939 with a vehicle identification number (VIN) that could not be determined due to the extent of the fire damage. On April 6, 2017, we conducted a fire origin and cause examination on the vehicle at USPS Vehicle Maintenance Facility located at 341 West St. Paul Avenue in Milwaukee, Wisconsin.

In the course of our work, we interviewed the vehicle maintenance staff, attempted to interview the carrier, examined the vehicle, examined maintenance records, and documented the fire damage with photographs. Our work to complete this assignment was performed by Western Region Fire Division Manager Otto W. Soyk, Jr., IAAI-CFI. A technical review of this report was performed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be in and around the flexible fuel lines routed and connected to ridged lines.
3. The specific ignition sequence and cause of the fire was determined to be the result of the flexible fuel line becoming split away from the connector to the ridged line and causing atomized gasoline to be sprayed and ignited on the hot surface of the operating engine components.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed to the mail side of the vehicle. The mail side door was severely fire damaged, with a portion of the aluminum frame having melted. The front of the vehicle had sustained severe fire damage. The cover for the engine compartment had been consumed by the fire. The bulkhead between the engine compartment and the mail compartment was observed with mass loss. Severe fire damage was observed throughout the engine compartment. The most severe fire damage was observed to the center portion of the engine compartment.

Minor heat damage was observed to the cargo area. Severe fire damage was observed to the driver's door and the front portion of the door frame was missing. The front fenders were observed with severe fire damage. The front aluminum top of the vehicle had melted as the result of thermal exposure from the fire. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

During the examination of the interior, we observed severe fire damage to the interior operator cab compartment, and minor damage to the rear cargo compartment. An analysis of the fire burn patterns in this area indicated that the fire extended into this area from the engine compartment through manufactured openings in the fire wall. There was no physical evidence observed that would have indicated that the fire originated in the interior of the vehicle.

Engine Compartment Inspection:

Examination of the engine compartment revealed severe fire damage throughout the compartment. The vehicle was equipped with a GM 2.5L, four-cylinder gasoline engine. The majority of the combustible material (hoses, belts, electrical wiring insulation) had been consumed in the fire. Severe fire damage was observed to the distributor, ignition coil, and the alternator. Only the bases of the distributor and alternator remained attached to the engine. The oil dipstick was still present, and when examined it showed that the oil level was within normal limits. Examination of the remaining electrical wiring revealed severe fire damage to the wiring. No indications of adverse electrical activity were observed on the wiring. The battery cables were also severely fire damaged. The most severe fire damage had occurred on the right side of the engine compartment. The LLV was equipped with a GM fuel filter system.

Undercarriage Inspection:

Examination of the undercarriage revealed severe fire damage in the area of the engine compartment. No fire damage was observed to the rear areas of the undercarriage. The exhaust system was intact and the transmission did not reveal any leaks or failures. The LLV was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel had sustained significant direct fire and heat damage. No evidence of failure causative of the fire was observed in the fuse panel. Due to the severe fire damage, we were not able to determine if any fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated within the engine compartment on the right top side of the engine where the fuel lines were located. The fuel lines had been consumed by the fire. This fire was caused by leaking fuel igniting when the vehicle was started.

Contributing Factors:

The LLV reportedly was being operated at the time of the fire and the carrier reportedly saw smoke coming from the engine compartment when he attempted to restart the engine. The carrier stated the vehicle had good power and had no previous problems with the vehicle on the day of the fire.

Evidence Collected:

There was no physical evidence collected at the time of the LLV examination.

Interviews:

After multiple attempts, we were unable to interview the mail carrier. We received information from the maintenance supervisor that the mail carrier had stopped the vehicle to make a delivery. Upon returning to the vehicle, she started the vehicle and immediately observed smoke then flames emanating from the engine compartment.

Service Records:

A review of the provided service records for the involved LLV was conducted. According to the maintenance records, besides regular vehicle maintenance, the vehicle had been serviced for several minor issues.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Otto W. Soyk

Otto W. Soyk, Jr., IAAI-CFI
Western Region Fire Division Manager

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

April 25, 2017
RCG File No. 50904605

Photograph 1
Front of the vehicle.



Photograph 2
Photo of the LLV at the time of the fire.



April 25, 2017
RCG File No. 50904605

Photograph 3
Remains of fuel lines.



Photograph 4
Right side of the engine compartment.



April 25, 2017
RCG File No. 50904605

Photograph 5

An overall view of the engine compartment.



Photograph 6

A view of the rear of the vehicle.



April 25, 2017
RCG File No. 50904605

CVs



**OTTO WILLIAM SOYK, C.F.I., C.A.I., S.C.L.A.
WESTERN REGION FIRE DIVISION MANAGER**

Mr. Soyk holds a Master of Arts Degree and Bachelor of Arts Degree from Governors State University in Illinois, in addition to numerous specialized training classes in specific areas. He is an Adjunct Professor at Penn Foster College where he developed and teaches a course in fire investigation and National Fire Protection Association, NFPA, 921 with a target participant of fire fighters and law enforcement. He is a Certified Fire Investigator through the International Association of Arson Investigators, a Certified Arson Investigator through the Illinois State Fire Marshall's office, and a Senior Claims Law Associate through the American Education Institute. Mr. Soyk holds certificates from Moraine Valley Community College in Automotive Technology. Mr. Soyk has testified as an expert witness in arbitration hearings as well as state criminal and civil courts and has been recognized as an expert in fireplace installations in arbitration hearings.

Mr. Soyk has an extensive background in fire investigation, criminal investigation, and insurance fraud investigation. His professional experience includes fire, and explosion investigation, electric fire ignition experimentation, full scale fire testing of ignition scenarios, as well as computer fire modeling.

Mr. Soyk has conducted numerous live fire training tests for fire fighters, as well as fire investigators using authentic room furnishings. In addition, he has prepared and presented numerous training sessions for law enforcement, fire fighters, claims adjusters, and the public. He has conducted over 2000 fire investigations including large multi-million dollar commercial losses.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Adjunct Professor - Penn Foster College
Master of Arts – Governors State University
Bachelor of Arts – Governors State University
Certified Arson Investigator - Illinois State Fire Marshall Office
Certified Fire Investigator - International Association of Arson Investigators
Certificate in Automotive Drive Train Technology MVCC
Breath-Alcohol Testing Operator
Member - International Association of Arson Investigators
Member - International Association of Arson Investigators (Illinois Chapter)
Past Member - International Association of Special Investigations Units
Past Member - International Association of Special Investigations Units (Illinois Chapter)

EMPLOYMENT HISTORY

2004 – Present	Rimkus Consulting Group, Inc.
1989 – 2004	American Family Insurance
1975 – 1989	Midlothian Police Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, New Jersey 07631
(201) 368-8551 Telephone
(201) 368-8557 Facsimile

Certificate of Authorization No. 24GA28127700

July 19, 2018

Re: RCG File No: 47810608
LLV Number: 8207808
VMF Location: 308 Thomas Street Newark, New Jersey
Subject: Preliminary/Final Report

Dear

On June 18, 2018, a fire involving USPS LLV 8207808 reportedly occurred as the driver was attempting to start the vehicle while at 7 Brittany Court in Springfield, New Jersey. The vehicle was manufactured by Grumman on 05/17/1988; model LLV-A91 RH with VIN 1GBBS10E8J2313098. Rimkus Consulting Group, Inc. was retained to examine the LLV at the Ft. Newark VMF located at 308 Thomas Street in Newark, New Jersey.

In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on July 3, 2018. The vehicle examination was conducted by Fire Consultant Jeffrey Wilson, NAFI-CFEI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 Standard for "Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment in the area of the bulkhead on the left side of the vehicle.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a leak in the fuel injector throttle body and the atomized gasoline vapor coming in contact with a competent ignition source, in the immediate vicinity of, or within, the air filter canister.
5. The rear interior storage mail/compartment was not involved with this fire.

Observations

Exterior Inspection:

During the course of our site visit, we observed the following on the exterior of the vehicle traveling in a counter-clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. The exterior front of the vehicle sustained severe fire, heat and smoke damage. The front panel sustained fire and heat damage to the left side, left corner of the bumper cover and headlight assembly. The hood, front support posts, and front windshield were no longer in place as a result of fire and heat damage.

The exterior left side sustained fire and heat damage from the front bumper to the sliding door. The sliding door and rear panel sustained heat and smoke damage. The front fender had been totally consumed. The exterior rear sustained smoke damage to roll up door and bulkhead. The exterior right side sustained fire, heat, and smoke damage to the upper portion of the rear side panel and to the driver door. Both front tires were also consumed as a result of the fire.

Interior Inspection:

The cargo area sustained smoke damage throughout. The driver's compartment sustained fire and heat damage throughout. The combustible material of the driver's seat had been consumed. The top portion of the mail rack along the left side had been consumed. The steering column had collapsed. The front bulkhead had been

consumed. The fuse block located on the right side of the driver's compartment had been completely consumed by the fire and was too severely damaged by the fire to be evaluated. The ignition was too severely damaged to be evaluated.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. The vehicle was equipped with a GM 2.5L, four-cylinder gasoline engine. The engine compartment sustained severe fire, heat and smoke damage throughout. The damage was most severe on the left side of the engine compartment. The power steering unit sustained fire damage. The reservoir had been consumed. The upper portion of the flexible return line and reservoir had been consumed. The upper radiator hose on the left side of the engine compartment had been consumed.

The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been consumed. The alternator sustained severe fire and heat damage. The insulation had been consumed from the conductors to the alternator. The main conductor was secure with no evidence of adverse electrical activity.

The top and side nearest to the engine of the battery case had been consumed, but displayed no evidence of adverse electrical activity. The radiator was completely destroyed. The air breather was in place but the air filter had been consumed. The distributor sustained fire and heat damage.

The brake lines positioned on the left side of the engine sustained fire and heat damage. The exhaust manifold displayed severe heat damage.

Undercarriage Inspection:

No fire damage was observed to the underside of the vehicle. The overall observation was that the fire began above the undercarriage and more specifically within the engine compartment. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block.

The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head.

The two front tires were completely destroyed and the two rear tires were found to be intact.

Fuse Panel Inspection:

The fuse panel on the driver's compartment was observed with severe fire damage. Examination of the fuse panel revealed severe fire damage and mass loss to the panel and all of the fuses, due to the severe fire damage and mass loss we were not able to determine if any fuses were open or blown.

Area of Fire Origin:

Based on the observed patterns of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated within the engine compartment of the vehicle. The area of origin was determined to be on the left side of the engine compartment. A more specific area of origin could not be determined due to the severe damage and lack of remaining physical evidence. The specific point of origin could not be conclusively identified due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination

Potential Contributing Factors:

The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

Evidence Collected:

There was no physical evidence collected for laboratory analysis.

Interview:

Mr. carrier/driver, United States Postal Service, provided the following information:

- Mr. pulled into the complex of 7 Brittany Court in Springfield, New Jersey to pick up the mail. He parked the LLV and shut off the engine.

- After picking up the mail, he returned to the LLV and attempted to start it, but was unable to do so. He made several attempts to start the LLV and was unsuccessful.
- He stepped outside the vehicle and called his manager who was going to send assistance.
- A short time later, while waiting outside his LLV, he observed thick black smoke coming from the engine compartment. He quickly went to the back of the LLV and removed the small quantity of mail that he had collected.
- Shortly thereafter, the fire department arrived; the LLV was fully involved with fire. The fire department extinguished the fire.
- He reported that for the past several months he has been having a lot of issues with this LLV and in particular starting it. They had to send a tow truck and he got another vehicle.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were indications of recent service or repairs that may have caused or contributed to the cause of the fire. On April 30, 2018, there was an issue with the vehicle stalling and losing power. The vehicle was towed in to M & M Automotive and found that the throttle body was leaking fuel. Both the distributor cap and fuel injector throttle body was replaced. On February 27, 2018, the vehicle again needed to be towed into M & M Automotive. The throttle body, starter and alternator were also replaced. Additionally, both battery cables were replaced because they displayed melting. The last preventative maintenance was reported to be May 28, 2018, with no issues noted.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jeffrey Wilson

Jeffrey Wilson, NAFI-CFEI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

July 19, 2018
RCG File No. 47810608

Photograph 1

Front of United States Postal Service LLV 8207808.



Photograph 2

Top of engine block with air filter removed.



July 19, 2018
RCG File No. 47810608

Photograph 3
Right side of engine.

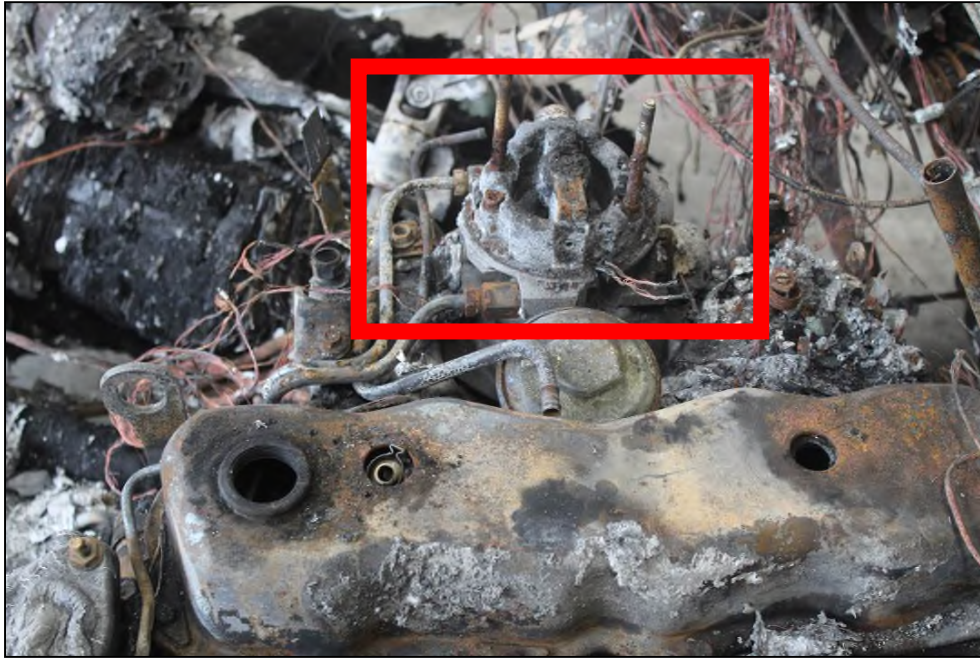


Photograph 4
Left side of engine.



July 19, 2018
RCG File No. 47810608

Photograph 5
Area around throttle body.



Photograph 6
Throttle body.



July 19, 2018
RCG File No. 47810608

CVs



JEFFREY WILSON, CFEI FIRE CONSULTANT

Mr. Wilson is a Certified Fire & Explosion Investigator (NAFI-CFEI) with the National Association of Fire Investigators, a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard) and a New York State Fire Investigator. Mr. Wilson is a Licensed Private Investigator in the states of New York, New Jersey and Connecticut. He has investigated and determined the origin and cause of several hundred fires to include commercial structures, residential structures, vehicles and wild land. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Wilson has testified on several occasions involving the investigation of fires in New York.

Mr. Wilson entered the field of fire service in 1984 and received a Bachelor of Science in Fire Science in 1988. His professional career includes twenty years of experience as a New Rochelle Police Officer. He obtained the rank of Detective in 1995 and was later assigned to major case investigations in 2005 which included among other investigations, Arson. He obtained certification as a New York State Fire Investigator in 2005 and was then appointed to the Westchester County Cause and Origin team at that time, which he continues to serve on today. In addition to his law enforcement career, Mr. Wilson has over thirty years as a volunteer firefighter and obtained the rank of Fire Captain.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Columbia Southern University, Orange Beach, AL, 2009, 22 Master Degree credits
Mercy College, Dobbs Ferry, New York, Bachelor of Science Degree in Fire Science, 1988

Certifications:

Fire Service Professional Qualification (ProBoard) - Certified Fire Investigator # NY755050-1117-0069
National Association of Fire Investigators (NAFI) Certified Fire and Explosion Investigator (CFEI)
New York State Fire Investigator - Level 1, 2005
New York State Fire Investigator - Level 2, 2005
New York State Emergency Technician #129714, 1988

Licenses:

State of New York - Licensed Private Investigator #11000154190
State of Connecticut - Licensed Private Investigator # FA-2508
State of New Jersey – Licensed Private Investigator # 8253

Training:

IAAI-CFIT TRAINER	50 Hours
Electrical Cause Investigation I-	2009
Electrical Cause Investigation II-	2009
Fire Scene Evidence Collection-	2009
Fire Behavior & Arson Awareness-	2005
Principle of Fire Investigations-	2005
Cause & Origin Determination-	1987



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

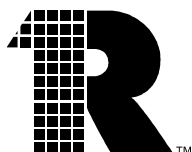
US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
15311 NE 90th Street
Redmond, WA 98052
(877) 677-6157 Telephone
(425) 629-1799 Facsimile

August 23, 2016

Re: RCG File No: 76101729
LLV Number: 8209113
VMF Location: 918 NW Park Avenue in Portland, Oregon
Subject: Final Report

On March 31, 2016 a fire occurred Involving USPS LLV 8209113. The fire reportedly occurred after it was refueled at a gas station. Rimkus Consulting Group, Inc. was retained to examine LLV 8209113, VIN 1GBBS10E1J2314402. The vehicle was located at the USPS vehicle maintenance facility located at 918 NW Park Avenue in Portland, Oregon.

Our investigation was conducted by Mr. Ted Hickey, Fire Consultant on April 28, 2016. In the course of our work, we examined the vehicle, took photographs, and reviewed the statements made by the letter carrier. This report and case was reviewed by Mr. Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the right (drivers side) of the engine compartment in the area where the positive battery cable was routed.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of the positive battery cable sustaining mechanical damage which allowed it to make contact with the metal motor mount. The harness heated and the insulation of the smaller wires ignited.

Observations

Exterior Inspection:

The exterior of the vehicle was examined and was free of fire damage.

Interior Inspection:

During the interior examination of the operator compartment, we observed damage to electrical wiring under the dash on the passenger right side of the vehicle. The wiring harness in this area was melted. We observed a melted heater vent. The conductors from the fuse block showed signs of heating and melting.

Engine Compartment Inspection:

We observed significant heat and melting damage to electrical conductors in the engine compartment, specifically to the conductors along the firewall. We observed the ground strap running from the engine to the fire wall on the left side of the vehicle was melted and separated.

The primary wiring harness was significantly fire damaged where it plugged into the back of the fuse panel. The majority of the electrical wiring associated with the harness sustained severe fire damage; the plastic insulation had been consumed by fire. Fire damage was also observed on the fire wall in the location that the harness transversed. The involved LLV appeared to be equipped with a High Energy Ignition (HEI) distributor.

Undercarriage Inspection:

While examining the undercarriage of the vehicle, we discovered the positive cable had worn through and grounded against a motor mount. This damage could only be observed and examined from under the vehicle. The rest of the undercarriage was intact and free of fire damage. The involved LLV was mounted on a GM frame and was equipped with a GM fuel filter system.

Fuse Panel Inspection:

We observed heat damage on the fuse plug side of the harness. As mentioned previously, the plug on the primary harness from the engine side was damaged by heat and fire.

Area of Fire Origin:

The area of origin for this fire was an adverse electrical event which had occurred where the positive battery cable sustained mechanical damage which allowed it to make contact with the metal motor mount. The harness heated and the insulation of the smaller wires ignited.

Potential Contributing Factors:

The starter cable should have been protected from making contact with the motor mount. Though there were records of the vehicle having starting problems, there was no record of the starter being replaced. However, the starter appeared to be a newer component.

Evidence Collected:

- Positive wire from the starter to the battery
- Ground strap from the engine to the firewall
- Starter
- Negative Cable
- Vehicle engine wiring harness

Collected evidence was shipped to the Charlotte, NC office for examination.

Interview:

The carrier was across the street from the post office at a gas station. The vehicle would not start when she tried to start it. Smoke began coming from under the dashboard. She called the office and reported the issue. Her supervisor went across the street to help. They called 911 and retrieved a fire extinguisher from the attendant and put out a small fire under the hood. They removed the mail. The fire department arrived to find the fire out.

Service Records:

A review of the service records for the involved LLV was conducted and there were no reports or recent repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Ted J. Hickey

Ted J. Hickey, I.F.S.A.C CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 23, 2016
RCG File No. 76101729

Photograph 1

Damage to dash and heater vent.



Photograph 2

Engine side of the fuse block connection.



Photograph 3

Positive cable arced and welded to motor mount.



Photograph 4

Smaller wires of the primary engine harness with burned insulation.



August 23, 2016
RCG File No. 76101729

CVs



TED J. HICKEY, CFI FIRE CONSULTANT

Mr. Hickey is a graduate from Columbia Southern University with an Associate of Applied Sciences Degree in Fire Science. He is a Certified Fire Investigator (C.F.I.) through the International Fire Service Accreditation Committee (I.F.S.A.C.). Ted is an International Code Council Certified Fire Code Inspector I and II. He has completed numerous educational seminars and continuing education courses. Ted has experience in fire origin and cause investigations, researching fire codes and training and evaluating fire investigators. He has conducted fire and explosion investigations that include commercial, residential, and automotive property.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S. Fire Science

Columbia Southern University – 2010

Certified Fire Investigator (C.F.I.) International Fire Service Accreditation Congress – 2010

Certified Fire Inspector II – International Code Council

January 2005 – Certification Number: 5098551

Member:

International Association of Arson Investigators – IAAI

International Association of Arson Investigators – IAAI Washington Chapter

National Association of Fire Investigators – NAFI

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2000 – 2015	Renton of Renton WA - Fire Inspector/Investigator
1986 – 1999	City of Renton Washington - Firefighter
1983 – 1986	City of Edmonds WA - Firefighter

DETAILED PROFESSIONAL EXPERIENCE:

RIMKUS CONSULTING GROUP, INC.

2015 – PRESENT

Fire Consultant

Conduct fire, arson, and explosion investigations including residential, commercial, marine and automobile losses for insurance companies and law firms. Collect and preserve evidence through precise documentation to ensure chain of custody. Conduct interviews with witnesses, responding firefighters, state fire marshal agencies, and other pertinent third party organizations. Prepare detailed, written investigative reports as to the final conclusions and opinions of the subject loss. Provide technical and scientific support to clients for subrogation and litigation purposes. Conduct code compliance research including electrical, gas, and installation code violations. Assist personnel with product design failure



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
77 Water Street, Suite 836
New York, New York 10005
Telephone: (646) 755-9259

December 2, 2019

Re: RCG File No: 100017985
LLV Number: 8210045
VMF Location: 21 Kilmer Road, Edison, New Jersey
Subject: Preliminary/Final Report

On October 18, 2019, a fire involving USPS LLV 8210045 reportedly occurred after a mail delivery on Veterans Road West near Englewood Avenue in Staten Island, New York. The vehicle was manufactured by General Motors and Grumman in 1987 and was a Grumman model LLV-93 RH.

Rimkus Consulting Group, Inc. was retained to examine the 1987 LLV at the Kilmer VMF located at 21 Kilmer Road in Edison, New Jersey. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on October 31, 2019. The vehicle examination was conducted by Technical Fire Manager David R. Meyers, IAAI-CFI (V). A technical review of the report was completed by VP, Fire Division Thomas W. Young, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. An effective fire pattern analysis and review of the remaining physical evidence concluded that the 1987 Grumman, USPS LLV 8210045 sustained severe fire, smoke, heat, and water damage.

2. The area of origin was determined to have been located within the engine compartment, on the mail side of the engine.
3. The specific area of origin was determined to have been located at the exhaust manifold on the mail side of the engine.
4. The specific ignition sequence and cause of the fire was determined to have been caused by a catastrophic failure occurring within the engine. Holes were punctured through the engine block by the piston rods during the failure. Engine oil was expelled from the engine through those penetrations and the engine oil was ignited by the exhaust manifold.

Observations

Exterior Inspection:

The exterior examination of the fire-damaged vehicle commenced from the front of the LLV and continued in a clockwise rotation. The inspection revealed that the vehicle sustained severe fire damage throughout the LLV. Fire patterns were consistent with a fire that originated within the engine compartment and spread towards the rear of the vehicle.

The mail side of the vehicle sustained the most severe damage in comparison to the driver's side of the vehicle. The majority of the aluminum body on the mail side front fender, engine compartment hood, bulkhead, driver's compartment roof and cargo compartment roof was consumed by the fire. The rear tires were intact, and the front mail side tire sustained greater damage as compared with the front driver's side tire.

Interior Inspection:

The interior inspection revealed severe fire damage in the interior compartment and moderate fire damage in the cargo compartment. The bulkhead was consumed by the fire at the front of the interior compartment. The remains of several partially consumed packages were located in the cargo compartment.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil.

The engine compartment sustained severe fire damage and the fire appeared to have lasted an extended period of time before being extinguished. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. The most severe

damage to the engine compartment was located on the mail side. All of the combustible items in the engine compartment were consumed by the fire.

No evidence was observed of the fire originating within the brakes, wheel hubs or tires in the area of the engine compartment. These were eliminated as potential causes of the fire.

The engine block was examined, and a large hole was observed in the engine block on the mail side. The large hole had the piston rod of the corresponding cylinder hanging out of it. The piston rod was for engine cylinder #1.

There was a large quantity of water within the engine block and the oil filter, most likely due to heavy rainfall in the area, prior to our inspection.

Undercarriage Inspection:

The undercarriage was inspected, and fire patterns found along the undercarriage revealed that the fire traveled from the front of the vehicle towards the rear. Fuel lines on the undercarriage were intact. The LLV was mounted on an AM General frame which appeared to be undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the engine compartment.

Fuse Panel Inspection:

The fuse panel normally positioned in the interior compartment to the right side of the steering column was partially consumed by the fire. The remains of the printed circuit board and several conductors found in that location were examined and no adverse electrical activity was observed on the remains.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated in the engine compartment on the mail side of the engine at the exhaust manifold.

Potential Contributing Factors:

A catastrophic failure of the internal engine had punctured the engine block allowing engine oil to be expelled onto the hot surfaces of the exhaust manifold. The temperature of the auto-ignition of the oil was reached and ignited. The fire then progressed to surrounding combustible materials.

Evidence Collected:

Engine oil was attempted to be collected from the oil filter for lab analysis; however, mostly water was observed. No samples were collected.

Interviews:

A phone interview with the carrier driving the LLV at the time of the fire was attempted. A written statement was provided for review. The carrier stated that the day of the fire he was driving the involved LLV. He stated that he had been driving the LLV for approximately six hours prior to the fire and everything seemed to be running fine with no known issues. He stated that he heard a loud bang. He immediately lost power and the readings on the gauges all dropped. He pulled off onto the side of the freeway. Smoke was starting to fill the cab and fire was seen coming from the engine compartment. 911 and the supervisor were called.

Service Records:

Based upon our review of the vehicle's maintenance records on October 31, 2019, the last regular preventative maintenance was performed on June 27, 2019. There were no recent repairs to the LLV that contributed to the catastrophic engine failure and fire. It does not appear that the maintenance that was performed on this vehicle was a contributing factor to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Thomas W. Young

Thomas W. Young, IAAI-CFI (V)
VP, Fire Division

Attachments: Photographs, Curriculum Vitae

December 2, 2019
Rimkus File No. 100017985

Photograph 1

Severe fire damage to the engine compartment (Photograph by USPS).



Photograph 2

Rear of vehicle (Photograph by USPS).



December 2, 2019
Rimkus File No. 100017985

Photograph 3

Severe fire damage to the engine compartment and interior (Photograph by USPS).



Photograph 4

Engine compartment fire.



Photograph 5
Engine compartment origin.



Photograph 6
Interior compartment.



Photograph 7

Observe hole in engine block on mail side.



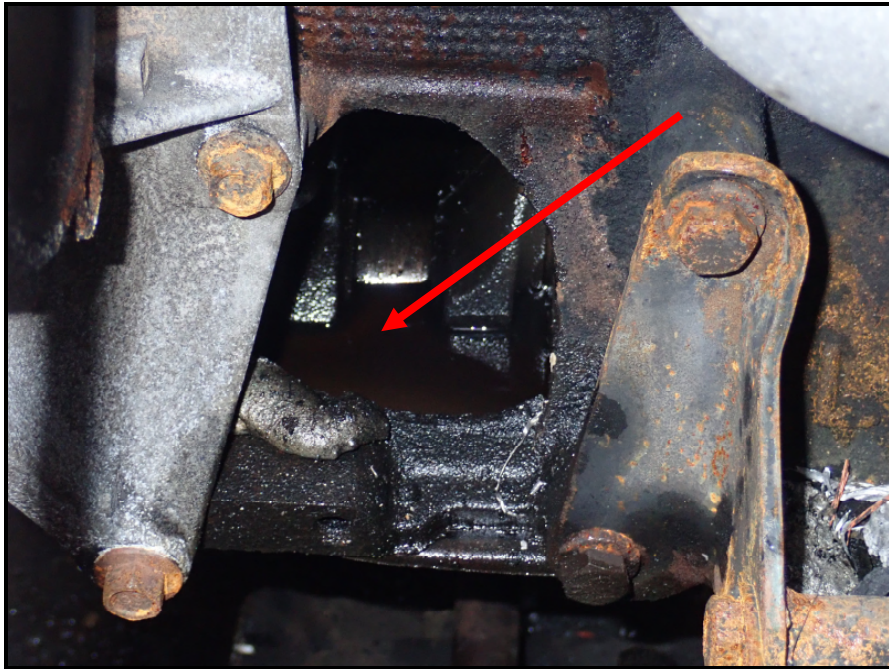
Photograph 8

Hole in engine block.



Photograph 9

Crank and piston rod in hole on engine block, observe the water inside the block.



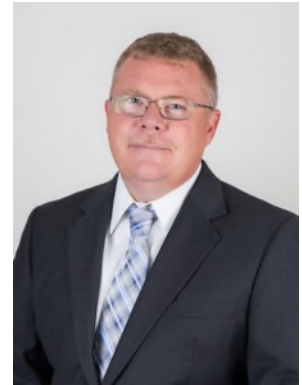
Photograph 10

Undercarriage.



December 2, 2019
Rimkus File No. 100017985

Curriculum Vitae



David R. Meyers, CFI, CFI (V)

Manager

Fire Division/Eastern Region

Background

Mr. Meyers is a Certified Fire Investigator (CFI) with the International Association of Arson Investigators (IAAI) and a Certified Fire Investigator with the National Board on Fire Service Professional Qualifications (Pro Board). Mr. Meyers has extensive experience in all facets of the fire service, having spent over 30 years in the municipal fire service. He spent over 20 years as a fire investigator with multiple jurisdictions, where he investigated and determined the origin and cause of more than 1,000 fires occurring at commercial and residential properties, as well as vehicles, marine vessels, and heavy equipment.

This U.S. Army veteran started his professional career in municipal fire service, where he served as a shift commander, a firefighter paramedic, a fire inspector, and an assistant fire chief. He is certified as a Firefighter II, Hazardous Materials Technician, and HAZWOPER Specialist. He is also a state-licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

Mr. Meyers possesses extensive knowledge of National Fire Protection Association fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. He has reviewed and approved various fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an emergency management coordinator and as a firefighter instructor. One achievement worth noting is his role in conducted fire protection reviews and provided reports and recommendations for NASCAR at large assembly race tracks across the nation.

He has testified in numerous court proceedings and depositions and has completed various educational seminars and continuing education courses in the field of fire investigation.

Professional Engagements

- Fire Investigations – International
 - Afghanistan – (1983-2012), Participated in U.S. military operations in Afghanistan. Performed fire inspections and fire investigations in remote locations throughout Afghanistan in areas with little or no

Contact Information

(704) 896-6227

drmeyers@rimkus.com

5900 Harris Technology Blvd.,
Suite P
Charlotte, NC 28269

fire-prevention programs and provided written documentation to the U.S. military and congressional committees on the safety and well-being of deployed military personnel.

- Fire Origin and Cause Investigations
 - Fire Marshal – Milwaukee County, WI (2012-2013), Investigated and determined the origin and cause of more than 300 fires and explosions, including cases involving commercial structures, residential structures, passenger vehicles, and fatalities.
 - Assistant Fire Marshal – Concord, NC (2001-2011), Investigated and determined the origin and cause of more than 300 fires and explosions, including cases involving include commercial structures, residential structures, passenger vehicles, and fatalities.
- Fire Code Compliance Evaluations
 - Fire Plans Reviewer – Concord, NC (2001-2011), Certified through the National Fire Academy as a Fire Plans reviewer and through the International Code Council as a Fire Inspector III. As a plans reviewer he conducted commercial building plans review for the City of Concord Fire Department, which included evaluating building plans for fire code compliance.
 - Fire Inspector III – Concord, NC (2001-2011), Evaluated hundreds of buildings for code compliance and conducted plans reviews of manufacturer-required installation procedures on sprinkler systems, fire alarms systems, and fire suppression systems.
 - NASCAR Fire Prevention/Protection – Concord, NC (2006-2007), Part of NASCAR's efforts to evaluate a growing problem of large-assembly racetrack fire prevention and protection concerns. Conducted evaluations of sanctioned NASCAR racetracks throughout the nation and identified fire code violations and potential hazards, and provided written recommendations and pre-planning guidelines for all NASCAR-sanctioned racetracks.
- Fire Cause and Origin Training
 - Coordinated and conducted mass-casualty incident trainings and simulations including aircraft crash and rescue along with Incident Command leadership training for the US military and for FAA training and airport certifications in North Carolina and Wisconsin.

Forensic Engagements

- Fire/Arson/Explosion Investigations – Residential/Commercial
 - Large-Loss Property Fires – multiple locations in NC, SC, and VA (2013-2019), Investigated complex, large-loss fires occurring at apartments, restaurants, warehouses, and manufacturing plants. Coordinated logistics during multi-party examinations.
 - Fatality Fires – multiple locations in NC, SC, and VA (2013-2019), Lead investigator in multi-fatality losses in residential and commercial properties.
 - Conducted lead investigations for international assignments in West Africa, South America, Central America, West Indies, and the Bahamas.
- Fire/Arson/Explosion Investigations – Automotive/Heavy Equipment/Conveyances

- Recreational Vehicle Fires – multiple locations in NC, SC, and VA (2013-2019), Performed various recreational vehicle fire investigations for both plaintiffs and defendants.
- Heavy Construction Equipment Fires – multiple locations in NC, SC, and VA (2013-2019), Performed various heavy construction equipment fire investigations.

Professional Experience

- Rimkus Consulting Group, Inc. 2013 – Present
 - Manager – Fire Division/Eastern Region
Performs fire, arson, and explosion evaluations in commercial and residential facilities, automobiles, heavy equipment, and conveyances. Investigates fires involving appliances and electrical devices. Collects, documents, and preserves evidence to ensure chain of custody. Conducts interviews with witnesses, responding firefighters, state and local fire marshal agencies, and other pertinent third-party individuals and organizations. Prepares detailed, written investigative reports pertaining to the origin and cause of fire losses. Assesses potential liability and subrogation issues, and provides expert technical and scientific support to clients. Conducts code compliance research to evaluate potential electrical, gas, and installation code violations. Assists personnel with product design failure analysis to determine if the product was the cause or contributing factor in a loss.
- Odell Fire and Rescue Department 2001 – Present
 - Fire Captain/Firefighter/Emergency Medical Technician/Fire Investigator
Responsible for responding to calls for emergency and non-emergency service. Firefighter/captain responsible for fire suppression activities and emergency medical care. Captain in charge of all fire prevention, fire investigations, and fire inspections. Responsible for the supervision of fire department employees and incident command.
- Milwaukee County Fire Department 2012 – 2013
 - Assistant Fire Chief/County Fire Marshal
Responded to fire scenes to conduct origin and cause investigations, collect and preserve evidence, interview and take statements from witnesses and suspects, and write detailed reports of determination of fire investigations and criminal offenses. Conducted fire inspections, reviewed plans, and performed code consultation for local fire codes and applicable standards for compliance. Responded to emergency incidents and conducted Incident Command functions. Assisted in instructing juveniles and other members of the community in fire education initiatives, including the juvenile fire-setters program. Conducted training for firefighters in fire suppression, fire prevention, and fire investigation techniques.
- North Carolina Air National Guard 2001 – 2012
 - Fire Protection Specialist
- North Carolina Department of Public Safety 2010 – 2012
 - Assistant Fire Chief/Fire Marshal

Responded to fire scenes to conduct origin and cause investigations, collect and preserve evidence, interview and take statements from witnesses and suspects, and write detailed reports of determination of fire investigations and criminal offenses. Conducted fire inspections, reviewed plans, and performed code consultation for local fire codes and applicable standards for compliance. Responded to emergency incidents and conducted Incident Command functions. Assisted in instructing juveniles and other members of the community in fire education initiatives, including the juvenile fire-setters program. Conducted training for firefighters in fire suppression, fire prevention, and fire investigation techniques.

- Concord Department of Fire & Life Safety 2004 – 2007
 - Assistant Fire Marshal
Responded to fire scenes to conduct origin and cause investigations, collect and preserve evidence, interview and take statements from witnesses and suspects, and write detailed reports of determination of fire investigations and criminal offenses. Conducted fire inspections, reviewed plans, and performed code consultation for local fire codes and applicable standards for compliance. Responded to emergency incidents and conducted Incident Command functions. Assisted in instructing juveniles and other members of the community in fire education initiatives, including the juvenile fire-setters program. Conducted training for firefighters in fire suppression, fire prevention, and fire investigation techniques.
- Wilmington Fire Department 1996 – 2001
 - Fire Marshal/Firefighter Paramedic
Responded to fire scenes to conduct origin and cause investigations, collect and preserve evidence, interview and take statements from witnesses and suspects, and write detailed reports of determination of fire investigations and criminal offenses. Conducted fire inspections, reviewed plans, and performed code consultation for local fire codes and applicable standards for compliance. Responded to emergency incidents and conducted Incident Command functions. Assisted in instructing juveniles and other members of the community in fire education initiatives, including the juvenile fire-setters program. Conducted training for firefighters in fire suppression, fire prevention, and fire investigation techniques.
- United States Army 1983 – 2012
 - Staff Sergeant
Served in Infantry, Airborne, and Air Assault divisions during active military service between 1983 and 2012. Special assignments included:
 - Operation Enduring Freedom – Kandahar, Afghanistan (2010)
 - Operation Jump Start – Arizona Border Patrol (2008)
 - Operation Iraqi Freedom – Ali, Iraq (2006)

Education, Certifications, Professional Associations, and Awards

- Fire Science, B.S.: Kaplan University (2015)
- Fire Protection, A.S.: Community College of the Air Force (2012)
- Fire Science, A.S.: Central Piedmont Community College (2011)
- Certified Fire Investigator (CFI): International Association of Arson Investigators (IAAI)

- Certified Fire Inspector III: International Fire Service Accreditation Congress (IFSAC)
- Certified Firefighter II: North Carolina Department of Insurance's Fire and Rescue Commission
- Certified Hazardous Materials Technician: International Fire Service Accreditation Congress (IFSAC)
- Certified HAZWOPER Specialist: Cincinnati State College
- U.S. Air Force Non-Commissioned Officer: Certificate of Induction
- North Carolina International Association of Arson Investigators (NCIAAI): Member
- Federal Emergency Management Agency (FEMA) Certificate of Achievement: Professional Development Series in Emergency Management
- Odell Fire and Rescue: Firefighter of the Year (2007)
- NASCAR: Certification of Appreciation
- Memberships: International Association of Arson Investigators (IAAI); International Association of Fire Chiefs (IAFC); International Fire Marshals Association (IFMA); National Association of Fire Investigators (NAFI); National Fire Protection Association (NFPA); North Carolina State Firefighter's Association (NCSFA)

Continuing Education

- Department of Defense (IFSAC): Rescue Technician II (2012); Fire Inspector III (2008); Fire Officer II (2008); Hazmat Technician (2008); Fire Instructor II (2007); Hazmat Incident Commander (2006); Airport Firefighter (2004); Firefighter II (2003)
- National Fire Academy: Fire Inspection Principles (2013); Principles of Fire Protection: Structures and Systems (2005, 2011); Interview and Interrogation, Courtroom Testimony (2008); Fire/Arson Investigation (2007); Testing and Evaluation of Water Supplies for Fire Protection (2005); Code Management: A Systems Approach (2004)
- Cincinnati State College: OSHA HAZWOPER Specialist (2000); Confined Space Rescue (2000)
- Public Agency Training Council (PATC): Develop, Lift, & Document Fingerprints (2007); Fire Origin and Cause – NFPA 921 (2005); Electrical Fire Investigation (2003); Arson Case Management (2000)
- IAAI Training: Managing Complex Fire Scene Investigations (2011); HAZWOPER Standard (2010); Investigating Motor Vehicle Fires (2010); Vacant and Abandoned Buildings: Hazards and Solutions (2010); Scientific Method for Fire and Explosive Investigation (2005, 2009); A Ventilation-Focused Approach to the Impact of Building Structures and Systems on Fire Development (2009); Investigating Fatal Fires (2009); Vehicle Fire Investigations (2007); Basic Fire Investigation (2005); Understanding Fire Through the Candle Experiments (2001); The Greater Cincinnati Regional Arson and Fire Seminar (1998)
- Pro Board: Fire Investigator, NFPA 1033 (compliant with current edition)
- North Carolina Department of Insurance's Fire and Rescue Commission: Hazmat Technician (2008); Airport Firefighter (2004); Fire Inspector III (2002); Firefighter II (2002)
- Ohio Fire Academy: NFPA 1123 Regulations for Pyrotechnics Course (2000) Underground Storage Tank Installers Regulation, Modern American Safety Training (1999); Underground Storage Tank: Fire Service Certification (1999); Juvenile Fire-Setters Course (1998); Underground Storage Tank: Inspector Certification (1998); Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police (1998); Firefighter II (1996)



Rimkus Consulting Group, Inc.
2550 Corporate Exchange Drive, Suite 24
Columbus, OH 43231
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

August 11, 2016

Re: RCG File No: 53602063
LLV Number: 8213334
Inspection Location: 1936 Rochester Industrial Lane in Rochester Hills, Michigan
Subject: : Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 8213334 that occurred at 3032 Palm Aire Drive in Rochester Hills, Michigan on June 12, 2016. In the course of our work, we examined and documented the fire-damaged vehicle and attempted to interview the carrier/operator on June 13, 2016.

The examination of the vehicle took place at the USPS Post Office at 1936 Rochester Industrial Lane in Rochester Hills, Michigan. The work to complete this assignment was performed by Fire Consultant Lancelot E. Furber, IAAI-CFI/CI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator compartment of the involved LLV.
2. The specific area of fire origin was determined to be within the operator's compartment at the center of the dash area.
3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the damage and the lack of remaining physical evidence in the area of origin.

Observations

Exterior Inspection:

The exterior examination of the vehicle revealed heat and fire damage to the operator's compartment of the LLV.

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments, was conducted working from the areas of least fire damage to the area of greatest fire damage. Our interior examination revealed extensive fire and heat damage to the operator's compartment at the center of the dash area of the LLV.

Engine Compartment Inspection:

Examination of the engine compartment revealed heat damage throughout this area. The LLV's battery was found intact and there were no visible arcs, faults, or failures identified to the battery and/or battery cables which could have offered an ignition source for this fire. Engine fluid levels were checked and found to be within the recommended operation levels. There was no visible evidence to support a claim that the fire originated within the engine compartment of this LLV. The involved LLV was equipped with a GM fuel filter system.

Undercarriage Inspection:

Examination of the undercarriage could not be conducted by lifting the vehicle due to the required lifting equipment not being present at this location. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage and the condition or location of the fuses within the panel could not be conclusively determined.

Area of Fire Origin:

The area of fire origin was determined to be within the operator's compartment at the center of the dash area. There was physical evidence of melting of metals within the area above the vehicle's electronic control module (ECM). The vehicle's head lamp switch and circuit wiring were determined to be competent ignition sources located within this area.

Potential Contributing Factors:

Prior to the examination of the vehicle, the LLV had been moved from the location of the fire. Due to the severity of the fire damage, some artifacts or evidence of contributing factors could have been lost in transport. An examination of the loss location was completed; however, any remaining physical evidence had been cleared away.

During the examination of the LLV, the remaining physical evidence, and witness statements, a failure of the head lamp switch could not be eliminated.

Evidence Collected:

No evidence and/or artifacts were collected at the time of the RCG examination per the direction of the Technical Fire Manager.

Interviews:

USPS Carrier was interviewed by telephone. During this interview, he stated that he smelled plastic burning and observed smoke coming from the dash vents of the LLV. He then heard sizzling and saw a flame inside of the dash vent located to the left of the steering column. He stated he exited the LLV and called "911".

Prior to the fire, he was operating the LLV for approximately 1.5 hours. The head lamps were "ON" the entire time. He did not witness any flickering of the head lamps or electrical issues.

Service Records:

During the review of the service records for the involved LLV, there was no recent work or repairs performed that would appear to have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Lancelot E. Furber

Lancelot E. Furber, IAAI-CFI, CFEI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Eastern Region Fire Manager

Attachments: Photographs, CVs

August 11, 2016
RCG File No. 53602063

Photograph 1
LLV exterior.



Photograph 2
LLV interior.



August 11, 2016
RCG File No. 53602063

Photograph 3
LLV interior ECM.



August 11, 2016
RCG File No. 53602063

CVs



**Lancelot E. Furber, GFireE, IAAI-CFI/CI, NAFI-CFEI
Fire Consultant**

Mr. Furber holds an Associates of Arts and Science Degree, in Fire Science, from Pikes Peak Community College and a Graduate Diploma from the Institution of Fire Engineers/Engineering Council located in London, England in addition to numerous specialized training classes in specific areas. He is a Certified Fire Investigator and Fire Instructor through the International Association of Arson Investigators, a Certified Fire and Explosion Investigator through the National Association of Fire Investigators, and is a Certified Firefighter, Certified Fire Officer and Certified Hazardous Material Operations/Technician. Mr. Furber holds certificates from Lehigh County Technical College in Automotive Technology and Residential Electrical Construction. Mr. Furber has testified as an expert witness in arbitration hearings as well as State criminal and civil courts.

Mr. Furber has an extensive background in Fire Investigation, Fire Suppression, and Vehicle Extrication. Mr. Furber is a board member of the National Fire Protection Association (NFPA) Fire Science & Technology Educators Section and the NFPA Fire Service Section. His professional experience includes computer fire modeling, forensic photography, forensic evidence collection, fire and explosion investigation, ignition scenarios and fire travel experimentation, and full scale live fire testing.

Education and Professional Associations

Associates of Arts and Science (Fire Science) – Pikes Peak Community College

Graduate Diploma – Institution of Fire Engineers/Engineering Council

Certified Fire Investigator – International Association of Arson Investigators

Certified Fire Instructor – International Association of Arson Investigators

Certified Fire and Explosion Investigator – National Association of Fire Investigators

Certified Firefighter II – PRO Board/NBFSPQ

Certified Fire Officer II – PRO Board/NBFSPQ

Certified Haz-Mat Operations/Technician – PRO Board/NBFSPQ

Certified Emergency Medical Technician

Member of: International Association of Arson Investigators; International Association of Identification; National Association of Fire Investigators; National Fire Protection Association; National Association of Subrogation Professionals; National Fire Academy Alumni Association; Professional Fire & Fraud Investigators Association; Motorsports Professional Group
Motorsports Safety Group



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
3620 Horizon Drive, Suite 200
King of Prussia, PA 19406
(888) 623-1460 Telephone
(610) 941-1288 Facsimile

August 9, 2016

Re: RCG File No: 47701975
LLV Number: 8213594
VMF Location: 1400 Harrisburg Pike in Lancaster, Pennsylvania
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 8213594, VIN 1GBBS1OE3K2300857. The vehicle was examined at the USPS Lancaster VMF located at 1400 Harrisburg Pike in Lancaster, Pennsylvania. The fire incident reportedly occurred at the US Post Office location at 47 S. Main Street in Manheim, Pennsylvania on May 13, 2016.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on May 19, 2016. Our work to complete this assignment was performed by Fire Consultant Jonathan Sivils, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be in and around the carburetor.

3. The specific ignition sequence and cause of the fire was the direct result of attempting to start the vehicle multiple times which caused the carburetor and air filter to become saturated in fuel. Once the engine started, a fire inside this area occurred.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. Minor smoke staining is visible in the center of the hood below the windshield. All remaining sides of the vehicle sustained no fire damage.

Interior Inspection:

Examination of the interior of the vehicle revealed no fire damage.

Engine Compartment Inspection:

The engine compartment was examined. Fire damage was noted along the rear of the engine at the air filter and carburetor. The air filter cover and filter were removed during suppression activities by the contractor working on the LLV at the time of the fire. Remains of a shop towel were located inside the carburetor. This towel was reportedly used to attempt suppression of the flames and fuel. Electrical wires that transverse the area above the air filter and carburetor were damaged by fire and were thermally damaged, thus eliminating them as a cause. The fuel system was examined and found to be intact with no damage noted. The fuel filter was intact and located along rear of the engine near the fire wall. The fuel system was the GM model. The battery for the vehicle was located at the front right side of the engine compartment and had no fire damage. Based on the fire patterns, the engine compartment was determined to be the area of origin. Based on the photographs, it could not be determined if the LLV was equipped with a High Energy Ignition (HEI) Distributor.

Undercarriage Inspection:

Examination of the undercarriage revealed no damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks

Fuse Panel Inspection:

Examination of the fuse panel revealed none of the fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment at the carburetor.

Contributing Factors:

The LLV reportedly was sputtering when driven and the carrier could not get it started after numerous attempts. The contractor was called to inspect the vehicle and attempted numerous times to start the vehicle. This caused the carburetor and air filter to become saturated in fuel. Once the engine started, a fire inside this area occurred.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

On May 19, 2016, an interview via telephone was conducted with OTC Fleet Services, whom was attempting to start the vehicle at the time of the fire. Witness reported the following information:

- He was called to the post office for an LLV that was sputtering when running and they could not get it started.
- He said he attempted to start the vehicle by cranking the motor for approximately 15 seconds. While cranking the motor the vehicle attempted to start and he heard a pop come from the engine.
- He opened the hood and saw flames coming from the air filter. He removed the cover and the flames got bigger.
- He stuffed a shop towel in the carburetor in attempt to smother the flames, but was unsuccessful. He then grabbed a fire extinguisher to extinguish the fire.

Service Records:

A review of the service records indicated that prior to the day of the fire, there had been no recent work or repairs that would have caused or contributed to the cause of the fire. A contract repair person was attempting to start the LLV when the fire occurred.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jonathan K. Sivils

Jonathan K. Sivils, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 9, 2016
RCG File No. 47701975

Photograph 1
Front of vehicle.



Photograph 2
Right side of vehicle.



August 9, 2016
RCG File No. 47701975

Photograph 3
Left side of vehicle.



Photograph 4
Interior of vehicle.



August 9, 2016
RCG File No. 47701975

Photograph 5
Engine compartment.



Photograph 6
Air filter and carburetor. Area of origin.



August 9, 2016
RCG File No. 47701975

Photograph 7

Wires damaged by fire above air filter.



Photograph 8

Wires damaged by fire above air filter.



August 9, 2016
RCG File No. 47701975

Photograph 9

Shop towel remains inside carburetor.



Photograph 10

Shop towel remains inside carburetor.



August 9, 2016
RCG File No. 47701975

CVs



Jonathan Sivils, IAAI-CFI, FIT, CFEI Fire Consultant

Mr. Sivils is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, as well as a Fire Investigation Technician (IAAI-FIT) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). He also holds an Associate of Science Degree in Fire Protection Technology. In a career spanning more than 25 years in the fire service, he has investigated and determined the origin and cause of more than 800 fires, to include commercial structures, residential structures, vehicles, marine and heavy equipment. He has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Sivils is a court-qualified expert witness in Criminal and Civil proceedings. Mr. Sivils has extensive training in fire and criminal investigations.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S Fire Protection Technology – Americus University, Washington D.C. – 2002
Bucks County Fire Chiefs and Firefighters Association
Bucks County Fire Marshal Association
International Association of Arson Investigators
National Association of Fire Investigators
National Fire Protection Association
Pennsylvania Association of Arson Investigators

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2012 – 2015	Donan Engineering Company, Inc.
2007 – 2012	Bucks county Fire Marshal Office, Bucks County, Pa
2005 – 2007	U.S. Department Of Defense Fire and Emergency Services
2009 – 2010	NEFCO Fire Investigations, Philadelphia, Pa
2003 – 2005	U.S. Department of Homeland Security
1998 – 2003	U.S. Department Of Defense Fire and Emergency Services
1993 – 2010	Penndel Fire Company, Penndel, Pa



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
2677 North Main Street., Suite 300
Santa Ana, CA 92705
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

August 9, 2016

Re: RCG File No: 71804927
LLV Number: 8213955
VMF Location: 2510 Monterey Street in Torrance, California
Subject: Final Report

On May 24, 2016, a fire occurred involving USPS LLV 8213955. The loss location was reported as "29511 Whitley Collins Drive in Rancho Palos Verdes, California." LLV 8213955 was examined at the USPS Vehicle Maintenance Facility located at 2510 Monterey Street in Torrance, California.

Rimkus Consulting Group, Inc. was retained to examine LLV 8213955, VIN 1GBBS1OE5K2301332 to determine the cause of the fire. In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on June 8, 2016. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver, and documented the vehicle with photographs. This report and case was reviewed by Jack R. Kennedy III, Technical Fire Manager.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at and around the flexible rubber fuel lines routed through the area of fire origin on the mail side of the engine compartment.

3. The specific ignition sequence and cause of the fire was determined to be the result of a rubber fuel line in contact with the hot operating surface of the exhaust manifold which caused the line to fail and ignite atomized gasoline vapors.

Observations

Exterior Inspection:

The vehicle sustained severe fire damage to the front/engine and driver/carrier compartments, with fire damage diminishing slightly into the cargo compartment.

The engine compartment hood was destroyed at the left side and melted away by fire and heat. Hood fragments remained at the right fender and right front areas. The left fender was destroyed and the left fender was relatively intact.

The grill was burned down to the bumper on the left side, with fire damage diminishing upward toward the right side. The operator compartment combustible components were generally consumed by fire and the roof was melted away.

The cargo compartment sustained heat and fire damage throughout. The roof was consumed/melted from fire heat with only fragments remaining at the perimeter. Exterior paint was burned down from the roof to approximately three feet above ground level. The rear left corner was burned down approximately one foot lower than the rear right corner. The rear bumper was intact. The rear cargo door was cut open by firefighters to gain access to the fire.

The left front tire was consumed by fire. The right front tire was heat damaged but remained approximately 80% intact. The right and left rear tires were intact.

Interior Inspection:

The operator compartment was completely destroyed by fire, with some fragments of unburned mail remaining under charred/burned mail where stacked on the floor. Fire patterns in this compartment were consistent with fire traveling from the engine compartment left side toward the right side and rear.

The cargo compartment sustained slightly diminished fire damage from the driver/carrier section toward the rear. The common aluminum wall separating the driver/carrier compartment from the cargo compartment was consumed/melted from fire and heat at the left side, and the right side was heat damaged, but remained in place. Heat discoloration and soot markings to the interior walls angled slightly upward to the rear right side to the rear cargo door.

Engine Compartment Inspection:

The engine compartment combustible components were all charred and/or consumed by fire. The greatest damage was in the area of the fuel filter and high pressure fuel supply line on the left side of the engine. The hood and left fender were consumed/melted in this area. Fire damage generally diminished away from this area to the remainder of the engine compartment right side and rear of the vehicle.

The engine fuel delivery system was modified from the original with what appeared to be a Wheeler Brothers Fuel System. The rigid high-pressure fuel line serving the fuel filter was found in fire debris piled in the cargo area by the fire department. The fuel line appeared to be the original fuel line, with the flexible hose connector directed to the rear of the engine.

The fuel filter and attached rigid lines was found on top of the engine. It was repositioned and examined. In its forward mounting location the input rigid line angled down to the right, toward the engine exhaust manifold. The rigid line was fixed in this position and could not be manually manipulated. This indicated the flexible fuel line serving the fuel input side (rear of the filter) would have been resting on the engine exhaust manifold or attached metal shroud.

Undercarriage Inspection:

No fire damage, other than soot, occurred to the undercarriage to the rear of the engine compartment. Fire damage under the engine compartment was most severe at the left side, with damage diminishing to the right side. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

All fuses were destroyed by the fire and could not be evaluated.

Area of Fire Origin:

The fire originated in the engine compartment, mail side in the vicinity of the fuel filter and flexible fuel supply line attached to the fuel filter.

Contributing Factors:

Based on our observations, a flexible high-pressure fuel delivery component (hose) was in direct contact with the exhaust manifold shroud. Heating of this rubber fuel line hose would likely cause it to fail over time.

Circumstances and witness observations indicate a fuel leak was a contributing factor to this fire. Degradation of engine performance and fuel odor was detected by the carrier, Ms. Palomares, and indicated a flammable liquid vapor ignition.

Evidence Collected:

No evidence was collected.

Interview:

Carrier for USPS, provided the following information:

- She has been with the USPS for 24 years.
- She typically does not drive this LLV.
- The day of the fire she drove the LLV from the USPS yard about 3 miles to the delivery area.
- She was making deliveries for about 15 minutes when the LLV “was kind of stalling” and “wouldn’t run good.”
- She saw black smoke in her rear view mirror and pulled over to call her supervisor. Her supervisor was busy and would call her back in 10 minutes. It was about 11:15 A.M.
- She remained stopped with the engine running. Then she smelled gas and within 5 minutes there was a “Boom” and “it was like the engine exploded.”
- She then saw fire coming from the engine compartment.
- She jumped out of the LLV, and left her cell phone inside. She ran up the hill yelling for help and a lady came out and called 911. The fire “went really fast.”

Service Records:

A review of the service records indicated that on April 13, 2016, it was reported that the involved LLV was “running rough – bogging down”. On this date the fuel injector and throttle sensors were repaired/replaced. There were no other repairs that were observed that would have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 9, 2016
RCG File No. 71804927

Photograph 1

Left side of subject LLV number 8213955.



Photograph 2

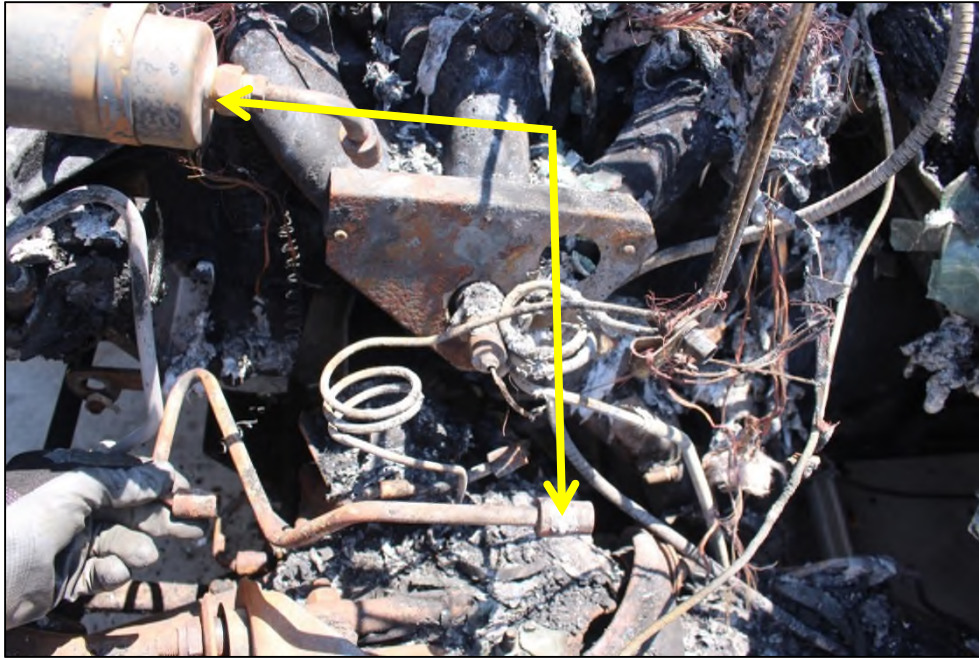
Engine compartment, left side. Fuel filter location, yellow circle.



August 9, 2016
RCG File No. 71804927

Photograph 3

Fuel filter and rigid supply line repositioned, yellow arrows. Note connector angles.



Photograph 4

Fuel line input connector angled towards exhaust manifold and metal shroud.



August 9, 2016
RCG File No. 71804927

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
10 Kimler Drive, Suite G
Maryland Heights, Missouri 63043
(888) 286-0127 Telephone
(314) 432-9501 Facsimile

January 18, 2019

Re: RCG File No: 53503451
LLV Number: 8214847
VMF Location: 1725 Clark Street St. Louis, Missouri
Subject: Preliminary/Final Report

Dear

On November 20, 2018, a fire occurred involving a 1988 Grumman, LLV 8214847. At the time of the fire, the vehicle was located near 6401 Sprucefield Drive in O'Fallon, Missouri.

On December 7, 2018, Rimkus Consulting Group, Inc. was retained to examine LLV 8214847. Our inspection of the vehicle occurred on December 17, 2018, at the Vehicle Maintenance Facility located at 1725 Clark Street in St. Louis, Missouri. In the course of our work, we completed an onsite inspection of the vehicle, including photographing the vehicle, arc mapping and witness interviews. The work to complete this assignment was performed by Fire Consultant Philip M. Noah, IAAI-CFI. This report was technical reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations", and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment in the area of the bulkhead on the left (mail) side of the vehicle.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a leak in the fuel injector throttle body and the atomized gasoline vapor coming in contact with a competent ignition source, in the immediate vicinity of the fuel lines or a hot surface ignition of the accumulation of engine fluids on within the engine compartment.

Observations

Exterior Inspection:

The exterior examination of the fire-damaged vehicle commenced from the front of the LLV and continued in a clockwise rotation. The fire-damaged vehicle was found inside a bay of the VMF. The inspection revealed that the vehicle sustained severe fire damage throughout the LLV. Fire patterns indicated that the fire originated within the engine compartment and spread towards the rear of the vehicle. The left side of the vehicle sustained greater damage as compared to the right side or driver's side. The vehicle sustained severe fire damage to the left side of the vehicle and roof over the driver's compartment, with a large portion of the aluminum body consumed by the fire.

Interior Inspection:

Interior inspection of the vehicle was completed. The most severe damage was observed along the front of the vehicle within the dashboard area. Fire damage decreased moving from the dashboard toward the rear, cargo compartment. Systematic excavation of the debris along the floor under the dashboard was completed. Visual examination of multiple artifacts including the remains of the headlight control switch was completed. No physical evidence consistent with the fire originating within the dashboard was observed. Fire movement patterns in the interior compartment were consistent with fire spread into the interior from the engine compartment.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. The engine compartment sustained severe damage and the fire appeared to have lasted an extended period of time before being extinguished. The remains of the battery were positioned on the right side of the engine

compartment. The positive and negative large conductors that had been connected to the battery were present and displayed no evidence of adverse electrical activity.

The most severe fire damage was observed along the left side toward the rear of the engine. Fire damage decreased from the left side of the engine toward the front and right side of the engine compartment. The greatest degree of fire damage was observed near the fuel filter and the exhaust manifold on the left side of the engine. Fire movement patterns were consistent with fire spread from the left rear of the engine into the interior of the vehicle through the bulkhead.

An inspection of the fuel filter and the fuel lines was completed. The combustible fuel lines that attached to the fuel filter had been consumed during the fire. Based upon the severity of fire damage it was not possible to determine the pre-fire condition of the fuel filter and/or the fuel line connections.

Undercarriage Inspection:

The undercarriage was inspected and fire patterns found along the undercarriage revealed that the fire travel from the front of the vehicle towards the rear. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head.

Fire damage was limited to the areas above the level of the frame rail. Inspection of the oil pan and transmission was unremarkable with respect to fire damage. The fuel filter was visible from the underside of the vehicle. Fire movement patterns from below the vehicle were consistent with a fire originating near the fuel filter.

Fuse Panel Inspection:

Inspection of the fuse panel was completed. The fuse panel had sustained severe fire damage. However, no physical evidence of abnormal electrical activity and/or possible ignition sources was observed.

Area of Fire Origin:

Based on the fire damage, the fire movement and intensity patterns, a comprehensive arc survey, and a systematic evaluation of the physical evidence, we determined the fire originated on the left side of the engine near the fuel filter and exhaust manifold. The point of the fire's origin, the first fuel ignited and ignition sequence of the fire was not conclusively identified from the remaining physical evidence.

Potential Contributing Factors:

Although neither the first fuel ignited nor the source of the fire's ignition was conclusively identified, fugitive gasoline contacting the hot exhaust manifold could not be eliminated as a possible ignition sequence of the fire.

It is possible, movement of the fuel lines, the fuel line connections, or the fuel filter may have damaged or loosened a portion of the fuel system contributing to a possible fuel leak.

Evidence Collected:

There was no evidence collected.

Witness Statements:

The carrier stated that she was delivering on her route when she observed smoke coming from the under the engine compartment hood. She stopped and removed the mail from the rear of the vehicle. When she had finished removing the mail the fire was getting large and then she called 911.

Service Records:

Based upon our review of the vehicle's maintenance records, work to repair and replace the parking brake cable and a portion of the vehicle's wiring harness was completed on November 8, 2018. The repair work would have been completed in proximity to the fuel lines and fuel filter.

After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Philip M. Noah

Philip M. Noah, IAAI-CFI, CVFI
Fire Division Manager

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

January 18, 2019
RCG File No. 53503451

Photograph 1

View from the front left corner of the vehicle.



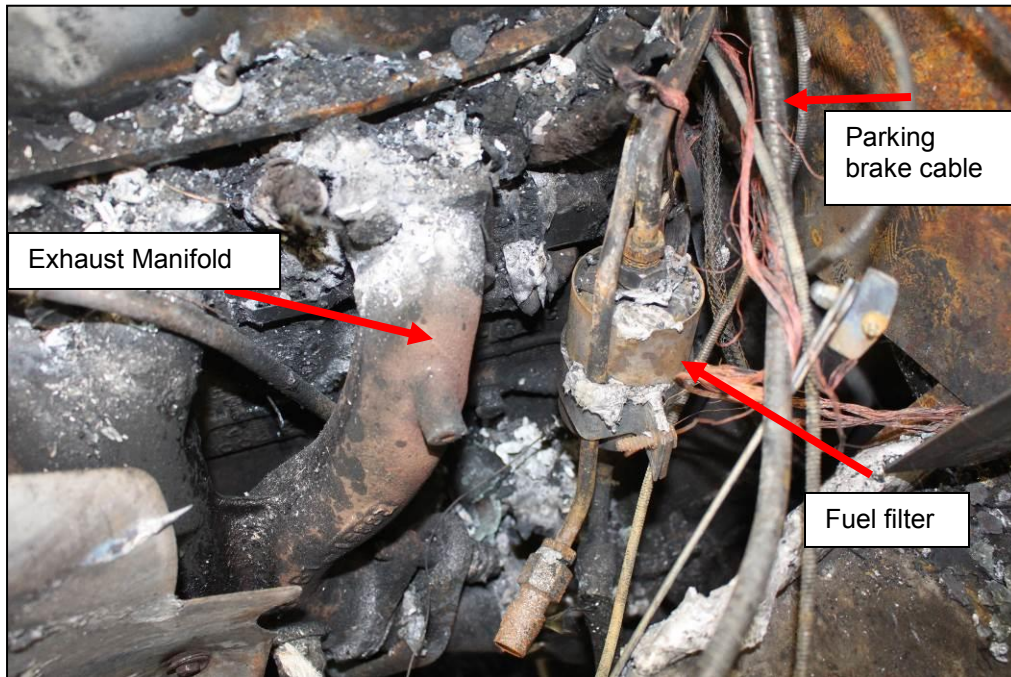
Photograph 2

View of the interior from the right, driver side door.



Photograph 3

View of the left side of the engine with the fuel filter, parking brake cable, and exhaust manifold.



Photograph 4

View of the fuel filter from the underside of the vehicle.



January 18, 2019
RCG File No. 53503451

Curriculum Vitae



Philip M Noah, IAAI-CFI Fire Consultant

Mr. Noah is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson investigators and a Certified Fire Investigator (CFI) in the State of Missouri. Mr. Noah is a licensed Private Investigator in the State of Arkansas; Mr. Noah is a licensed Private investigator and licensed Private Fire Investigator in the State of Missouri. Mr. Noah has over 27 years of experience in fire suppression operations, fire/explosion investigations, technical rescue, hazardous material incidents, fire code enforcement, and building construction plans review. He has lead or assisted in the origin and cause of more than 300 fire and explosion investigations. As a fire investigator he conducted origin and cause investigations on fatal structure fires, residential fires, commercial fires and vehicle fires.

Mr. Noah held the position of Fire Marshal with the Springfield Mo Fire Dept. from 2009 to 2015. As a Fire Marshal Mr. Noah served as a public safety bomb technician on the Springfield Mo. Bomb squad, and was a founding member of the Greene County, Missouri Arson task force, during this time he worked closely with the FBI and ATF. While in this position he also performed hundreds of building plans reviews looking for International Fire Code compliance. Mr. Noah has testified and been qualified as an expert in court proceedings pertaining to fire origin and causation.

Mr. Noah has instructed courses in fire scene evidence preservation, explosives awareness and fire investigation awareness for the insurance industry.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Missouri State University - General education and Chemistry
Drury University - Law Enforcement Academy
Certified Fire Investigator: IAAI (Tested)
Licensed Private Fire Investigator: State of Missouri
Licensed Private Investigator: State of Missouri
Certified Fire Investigator: State of Missouri (Tested)
Class "A" Peace officer license: State of Missouri (Tested)
Certified Firefighter 1&2: State of Missouri (Tested)
Certified Fire Officer 1&2: State of Missouri (Tested)
Certified Fire Inspector: State of Missouri (Tested)
Certified Fire Inspector 1&2: International Code Council (Tested)
Certified Bomb Technician: Federal Bureau of Investigation (Tested)
Certified Fire Service Instructor: State of Missouri (Tested)
Certified Major Crimes Investigator: Springfield Mo Police Department (Tested)
International Association of Arson Investigators, 2010- Present
Missouri Professional Fire and Fraud Investigators (past)
International Association of Fire Fighters (past)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1431 Greenway Drive, Suite 900
Irving, TX 75038
(877) 271-1168 Telephone
(972) 518-0011 Facsimile

Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2017

February 15, 2017

Re: RCG File No:

LLV Number: 02214280
8215330
VMF Location: 4600 Mark IV Parkway in Fort Worth, Texas
Subject: Preliminary/Final Report

Dear

On December 18, 2016, a fire occurred involving USPS LLV 8215330, while reportedly being driven on Highway 114 in Grapevine, Texas. There are conflicting reports which fire department responded to the fire since the incident occurred on the border of two cities.

Rimkus Consulting Group, Inc. was retained to examine the involved LLV. Examination of the vehicle took place at the VMF located at 4600 Mark IV Parkway in Fort Worth, Texas. Our work to complete this assignment was conducted by Gary Cochran, IAAI-CFI on December 27, 2016. During this investigation, we examined the LLV, documented and photographed the remaining physical evidence, conducted interviews and reviewed service records. This report and investigation was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment undercarriage of the involved LLV.

2. The specific area of fire origin was determined to be in and around flexible fuel lines routed and connected to ridged lines.
3. The specific ignition sequence and cause of the fire was determined to be the result of the flexible fuel line becoming split away from the connector to the ridged line and causing atomized gasoline to be sprayed and ignited on the hot surface of the operating engine components.

Observations

Exterior Inspection:

During the examination of the exterior of the LLV, we observed severe fire damage to the engine compartment and operator cab compartment. An analysis of the exterior fire patterns indicated that the fire originated in the engine area of the vehicle.

Interior Inspection:

During the examination of the interior, we observed severe fire damage to the interior operator cab compartment, and severe damage to the rear cargo compartment. An analysis of the fire burn patterns in this area indicated that the fire extended into this area from the engine compartment through manufactured openings in the fire wall. There was no physical evidence observed that would have indicated that the fire originated on the interior of the vehicle.

Engine Compartment Inspection:

During the examination of the engine compartment we observed severe fire damage to the entire engine compartment. We examined the transmission fluid level, and it appeared to be within manufacturer's recommendations. We were not able to check any other fluid levels due to the fire damage. Examination of the battery revealed fire damage to the battery. The battery cables were damaged but still attached to the battery post. There was no physical evidence of adverse electrical activity. The oil fill cap was missing at the time of our examination. We cannot identify if it was burned away during the fire or removed prior to our inspection. The LLV was equipped with a GN fuel filter system.

Undercarriage Inspection:

During the examination of the undercarriage, we observed severe fire damage below the engine, mainly on the fuel line side (opposite the driver side) of the engine. We observed heavy oil residue on the underside of the engine as well. We did not observe any holes or punctures in the engine itself. During our examination of the

undercarriage, we observed two mesh material fuel lines attached to two metal rigid fuel lines in the area of origin. One mesh material fuel line, connected to a metal rigid fuel line, had split away from the factory pressed fitting. The second fuel line appeared to have been damaged as a result of the fire. The LLV was mounted on a GM frame.

Fuse Panel Inspection:

We inspected the severely fire-damaged fuse panel, and were not able to determine which fuse was powering which items. We observed a red conductor within the wiring harness on the topside of the fire wall above the steering column that had electrical activity on the conductor. This was most probably from being attacked by the fire. A mechanic who identified the conductor stated the conductor powered the headlight switch.

Area of Fire Origin:

The area of origin was in the undercarriage area of the engine compartment, on the opposite side of the operator area, where two fuel lines were located. Both fuel lines were rigid and had a factory connector to a mesh material back into a rigid line, which came from the frame chassis and from the fuel tank. It appeared one was supply and one was return.

Contributing Factors:

A failure in the fuel line where the mesh material had split away from the factory rigid metal fitting. The splitting of the fuel line, caused raw atomized fuel to expel and spray onto the hot motor surface and hot exhaust system, causing the atomized fuel to ignite.

Evidence Collected:

There was no physical evidence collected at the time of the LLV examination.

Interview:

An interview with the carrier was attempted on multiple occasions; however, contact could not be made.

Service Records:

A review of the service records for the involved LLV was conducted and we found no recent service work or listed repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gary L. Cochran

Gary L. Cochran, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

February 15, 2017
RCG File No. 02214280

Photograph 1

Front view of fire-damaged LLV. Arrow is area of origin.



Photograph 2

Side view of LLV.



Photograph 3

View of electrical activity on red conductor in wiring harness above steering wheel.



Photograph 4

View of engine compartment above area of origin. Arrow indicates area of origin.



Photograph 5

View of two fuel lines in area of origin.



Photograph 6

Zoomed in view of separated fuel line in area of origin.



February 15, 2017
RCG File No. 02214280

CVs



**GARY L. COCHRAN, IAAI-CFI, NAFI-CFEI & CVFI
FIRE CONSULTANT**

Mr. Cochran has more than 30 years of experience in fire service. He has actively served as a Fire Investigator for two separate municipalities, and has served as an active member of the Tarrant County Fire/Arson Investigator's Association and most recently with the Grapevine Fire Department, Texas, as the Fire Code Enforcement Officer and Fire Investigator. He was also the Fire Code Enforcement Officer and Fire Investigator for the Town of Westlake, Texas. Mr. Cochran has extensive training in fire and criminal investigations, as well as hazardous material, nuclear, chemical, and biological and EMS incidents. He is certified through the International Association of Arson Investigators as a Certified Fire Investigator (IAAI-CFI) as well as the National Association of Fire Investigator as a Certified Fire and Explosion Investigator (NAFI-CFEI) and Certified Vehicle Fire Investigator (NAFI-CVFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Fire Protection Technology, Tarrant County College
Fire Service Administration, Weatherford College
Occupational Safety & Health, A.A.S., Columbia Southern University
International Association of Arson Investigators (IAAI), Texas Chapter, 2007 - Present
International Association of Arson Investigators (IAAI), 2007 - Present
International Association of Fire Fighters (IAFF)
National Association of Fire Investigators (NAFI), 2005 - Present
Texas Firefighters Association, 1987 - Present
Tarrant County Fire and Arson Investigators Association (TCFAIA), 2005 - Present
North Texas Fire Investigators Association (NTFIA), 2008 - Present

SPECIALIZED EDUCATION

Complex Arson Investigation Techniques for the Insurance Industry (IAAI) 2014
A.A.S. - Occupational Safety & Health, Columbia Southern University 2012
Texas IAAI Arson Conference, Austin, TX 2012
Pate Hands-On Vehicle Fires – Tested 2012
CVFI (NAFI) - Tested 2012
Texas IAAI Arson Conference, Austin, TX 2011
NFA – Forensic Evidence Collection, Emmitsburg, MD 2011
South Texas Arson Conference, South Padre, TX 2010
NFA – Fire/Arson Origin and Cause Investigations, Emmitsburg, MD 2010
NFA 25–Inspections, Testing and Maintenance of Water Based Fire Protection Systems, Houston, TX 2010
NFPA 72 - Inspections Testing and Maintenance of Fire Alarms, Houston, TX 2010
East Texas Arson Seminar, Longview, TX 2009
Certified Fire Investigator (IAAI-CFI) Tested 2009
Legal Aspect of Fire Investigations, North Richland Hills, TX 2009
East Texas Arson Seminar, Longview, TX 2008
NFA – Developing Fire & Life Safety Strategies, Emmitsburg, MD 2008
NFA – Plans review for Inspectors, Emmitsburg, MD 2007
TCLEOSE Basic Police Officer 2007
Intermediate Fire/Arson Investigator 2007
Intermediate Fire Inspector 2007
IAAI Texas Chapter Arson Seminar, Austin, TX 2007
TEEX – Courtroom Preparation for First Responders, Benbrook, TX 2006
Certified Fire and Explosion Investigator (NAFI-CFEI) Tested 2006
Advanced Firefighter 2005
Juvenile Fire Setter Intervention Specialist I & II Tested 2005
IAAI Texas Chapter Arson Seminar, Austin, TX 2005
Hazardous Material Technician School, Dallas, TX 2000
Paramedic School, Hurst, TX 1985
Basic Firefighter School, Bedford, TX 1983



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus New York, PLLC
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, New Jersey 07631
(201) 368-8551 Telephone
(201) 368-8557 Facsimile
Certificate of Authorization No. 0010333

May 22, 2018

Re: RCG File No: 47810483
LLV Number: 8216637
VMF Location: 109 Ludy Street Hicksville, New York
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine US Postal Service LLV 8216637 with Vehicle Identification number (VIN) 1GBBS10E3K2304004. The vehicle was examined at the USPS Hicksville Vehicle Maintenance Facility located at 109 Ludy Street in Hicksville, New York. The fire incident reportedly occurred in the vicinity of 55 Seaweed Road in Southampton, New York on April 16, 2018 while it was being operated on its normal delivery route.

In the course of our work, we examined and documented the fire damaged vehicle on May 1, 2018. In addition, we conducted a telephone interview with the carrier/driver of the vehicle. Our work to complete this assignment was performed by Donald E. Berg, IAAI-CFI (V). This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator's compartment of the involved LLV.

2. The specific area of fire origin was determined to be at the rheostat headlamp switch positioned in the left side of the dashboard.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rheostat switch within the headlamp switch which heated and ignited surrounding combustible materials.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the left side of the vehicle refers to the mail side and the right side refers to the driver's side.

Severe fire and heat damage were observed on the front of the vehicle to include structural mass loss. The window frame, windshield, dashboard, bulkhead and the majority of the roof structure over the operator's compartment was consumed during the fire event. The majority of the fire damage was located at the front of the vehicle.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred in and around the driver's side of the vehicle in the area of the dashboard and bulkhead areas. The vast majority of the combustible materials in and around these areas had been consumed during the fire to include the majority of the conductors, switches, and related components. Fire patterns converted to heat and smoke patterns as progress was made into the cargo compartment.

Engine Compartment Inspection:

The engine compartment was examined. Severe fire and heat damage was observed at the rear of the compartment and decreased in severity as progress was made away from the bulkhead. The battery for the vehicle was located at the front right side of the engine compartment and sustained severe fire damage from exterior fire attack. There were no indications of internal failure within the engine block or reciprocating assembly. The engine oil and transmission fluid levels were unable to be checked due to the dipsticks having been consumed during the fire event.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire or mechanical damage. The LLV was mounted on a GM general frame. The fuel tank and fuel lines did not show any signs of failure. The fuel tank was undamaged and not leaking. The exhaust system was intact. The transmission was intact, undamaged and not leaking fluids.

Fuse Panel Inspection:

The fuse panel had sustained severe fire damage. All of the fuse panel combustible materials had been consumed during the fire. The electrical conductors and their connectors were observed with no adverse electrical event. The fuse panel was eliminated as the origin of the fire.

Area of Fire Origin:

Based on our observations and witness statements, it was determined that the area of fire origin was in the driver's compartment on the left side of the steering column at the headlamp switch.

Potential Contributing Factors:

Issues with the headlamp switch in the area of origin could not be eliminated. The involved components were collected and sent to Technical Fire Manager David R. Meyers, IAAI-CFI in the Charlotte, North Carolina office for storage.

Evidence Collected:

Item A: Remains of Headlamp Switch

Item B: Misc. Items from LLV floor below the dashboard and area of the light switch.

Interview:

A telephone interview was conducted with the carrier/driver who reported the following: The vehicle was operating normally with no issues on the day of the fire. Around 2:10 P.M. while making his delivery he noticed a chemical smell coming from the vents that he thought was coolant. After making a delivery, he observed smoke coming from the underside of the dashboard and behind the light switch. He observed that the plastic components of the switch were melting, and when

he looked behind the switch he saw a flame. He called his supervisor to report the vehicle problem. She advised him to call 911 and report the fire. He was able to remove most of the mail from the vehicle. He waited at the side of the road for the fire department to arrive. No injuries were reported during the fire event.

Service Records

A review of the service records revealed that routine maintenance and the replacement of the headlight switch was conducted by Joe Joe's Auto Care located in Southampton, New York on April 6, 2018.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NEW YORK, PLLC

Donald E. Berg

Donald E. Berg, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

May 22, 2018
RCG File No. 47810483

Photograph 1

View of mail side of vehicle.



Photograph 2

View of rear of vehicle.



May 22, 2018
RCG File No. 47810483

Photograph 3

View of driver's side of vehicle.



Photograph 4

View of front and engine of vehicle.



May 22, 2018
RCG File No. 47810483

Photograph 5

View of fire damaged engine.



Photograph 6

View of fire damaged battery from engine compartment.



May 22, 2018
RCG File No. 47810483

Photograph 7

View of bulkhead and dashboard on driver's side of vehicle.



Photograph 8

View of floor beneath steering column showing remains of light switch.



May 22, 2018
RCG File No. 47810483

Photograph 9

Close up view of remains of light switch.



May 22, 2018
RCG File No. 47810483

CVs



DONALD E. BERG, IAAI-CFI, CFEI, CFII FIRE CONSULTANT

Mr. Berg is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) with the National Association of Fire Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). Mr. Berg is a Licensed Private Investigator in the state of New York, New Jersey and Connecticut. He has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, marine, vehicles and heavy construction equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Berg has testified on numerous occasions involving the investigation of fires in New York and Connecticut.

Mr. Berg entered the field of fire service in 1981. His professional career includes thirty-three years of experience in fire suppression, building inspection, code enforcement, hazardous material, and fire and explosion investigations. He was an active member of the Connecticut Fire Marshals Association, New England Fire Marshals Association and a member of the Stamford Connecticut Arson Task Force. He served as a Deputy Fire Marshal and Fire Lieutenant in the City of Stamford Connecticut for more than twenty-eight years.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

State University of New York, Purchase, New York Bronze Sculpture, 1986
State of Connecticut, Meriden, Connecticut Fire Marshal Certification Program, 250 hours, 1982
Philadelphia College of Art Philadelphia, Pennsylvania Illustration, 1980
Rhode Island School of Design Providence, Rhode Island, Illustration, 1978

Certifications:

International Association of Arson Investigators - Certified Fire Investigator # 23-020138
National Association of Fire Investigators (NAFI) Certified Fire and Explosion Investigator (CFEI)
National Association of Fire Investigators (NAFI) Certified Fire and Explosion Investigator Instructor (CFII)
State of Connecticut Certified Fire Service Instructor
United States Coast Guard Aux ID # 1238260 FSO-HR SR1-12-08
United States Coast Guard Auxiliary Certified Vessel Examiner
United States Coast Guard Auxiliary Instructor
United States Coast Guard Auxiliary Fingerprint Technician

Licenses:

State of Pennsylvania Licensed Private Investigator # MD5562012
State of Connecticut-Licensed Private Investigator # FA-2508
State of New York-Licensed Private Investigator #11000154190
State of New Jersey –Licensed Private Investigator # 8253

Training:

IAAI Process of Elimination, 3 Hours, 2015
IAAI Insurance and Fire Investigation, 4 Hours, 2015
IAAI Investigating Vehicle Fires Live Burn 16 Hours, 2013



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road, Suite 224
Atlanta, GA 30339
(770) 436-9399 Telephone
(770) 438-2189 Facsimile

May 4, 2016

Re: RCG File No: 50805601
LLV Number: 8217103
VMF Location: 3900 Crown Road in Atlanta, Georgia
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 8217103, VIN 1GBBS10E2K2304351. The vehicle was examined at the USPS Atlanta Vehicle Maintenance Facility located at 3900 Crown Road in Atlanta, Georgia. The fire incident reportedly occurred at 1129 South Park Street in Carrollton, Georgia on December 2, 2015.

In the course of our work, we examined and documented the fire damaged vehicle on February 5, 2016 and interviewed the carrier/driver on March 3, 2016. Our work to complete this assignment was performed by Fire Consultant Gregory M. Cloer, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. A thorough analysis of the involved LLV indicated that the fire originated in the interior passenger/operator compartment.
2. The specific area of fire origin was determined to be in and around the dashboard of the LLV at the headlamp switch.

3. The specific ignition sequence and cause of the fire was determined to be the failure of the headlamp switch, the most probable failure being the rheostat switch for the dimmer function which heated until the surrounding combustible materials were ignited.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side.

Fire patterns were observed on the hood and most of the windshield had been consumed by the fire. A portion of the roof had been consumed above the driver's seating area. The fire had burned thru the right corner panel below the mirror on driver's side of the vehicle. There was no fire patterns observed on the rear of the vehicle. Smoke staining was observed around the passenger side door of the vehicle.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred to the dashboard area. Most of the combustible materials at the dashboard and in the passenger compartment area had been consumed during the fire. Electrical conductors in the passenger compartment were examined and there were no indications of adverse electrical activity.

Burned remains of the headlamp switch assembly were found on the driver's seat.

Engine Compartment Inspection:

The engine compartment was examined. Fire damage was observed in the rear area of the engine compartment. The fire had traveled from the passenger compartment into the engine compartment through the manufactured bulkhead openings and through the bulkhead. The fuel system was examined and found to be intact with no damage noted. The fuel filter was intact and located along the rear of the engine near the bulkhead. The fuel system was an AC Delco model. The battery for the vehicle was located at the front right side of the engine compartment and had no fire damage. The engine oil and transmission fluid were examined and observed to be within their normal operating range. Based on the fire patterns, the engine compartment was not the area of origin.

Undercarriage Inspection:

Examination of the undercarriage revealed no damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage. The fire damage observed was a result of the fuse panel being exposed to the fire.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the left side of the dashboard area of the vehicle. The specific area of origin is the headlamp switch.

Contributing Factors:

Issues with the headlamp switch in the area of origin could not be eliminated. The involved components were collected and sent to Jack Kennedy in the Charlotte, North Carolina office for analysis.

Examination of the involved headlamp switch confirmed the failure as being the point of fire origin.

Evidence Collected:

Exhibit 1: Headlamp switch assembly

Interview:

On March 3, 2016, an interview was conducted with the carrier/driver of the vehicle at the time of the fire. She reported the following information:

- She was driving the vehicle with the headlamps on.
- She had turned the interior dome light on and then turned it off.
- Approximately 4 minutes after turning the dome light off, she smelled smoke and then observed smoke coming from underneath the dashboard.
- She pulled over and turned off the headlamp. When she pushed the headlamp switch in, fire shot of the dashboard around the headlamp switch.

Service Records:

A review of the service records for the involved LLV indicted that the last PMI was completed by the Atlanta VMF on December 1, 2015, prior to the fire. There are no indications in the provided work order history that any repairs or replacement of the headlamp switch had been conducted. The listed mileage on the LLV at the time of the last service was 173,790.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

May 4, 2016
RCG File No. 50805601

Photograph 1

View of the front exterior.



Photograph 2

View of the right side exterior.



May 4, 2016
RCG File No. 50805601

Photograph 3

View of the rear exterior.



Photograph 4

View of the left exterior.



May 4, 2016
RCG File No. 50805601

Photograph 5

View of the cargo compartment interior.



Photograph 6

View of the fire patterns in the passenger compartment.



May 4, 2016
RCG File No. 50805601

Photograph 7

View of the driver's area.



Photograph 8

View of the burned remains of the headlamp switch assembly.



May 4, 2016
RCG File No. 50805601

Photograph 9

View of the fire patterns extending from the passenger compartment into the engine compartment.



Photograph 10

View of the fire penetration through the bulkhead from the passenger compartment into the engine compartment.



May 4, 2016
RCG File No. 50805601

Photograph 11

View of the undercarriage.



Photograph 12

View of the fire-damaged fuse panel.



May 4, 2016
RCG File No. 50805601

Photograph 13

View of the fire origin.



Photograph 14

View of the headlamp switch assembly collected as evidence.



May 4, 2016
RCG File No. 50805601

CVs



**GREGORY M. CLOER, C.F.I.
FIRE CONSULTANT**

Mr. Cloer is a Certified Fire Investigator (C.F.I.) by Georgia P.O.S.T., NPQ, N.F.A. and IAAI for fire/arson investigation, and is certified by Georgia P.O.S.T. as a basic peace officer. Mr. Cloer has also served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting & prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator. Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. Mr. Cloer has testified as an expert in criminal court related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certification, P.O.S.T. Basic and Advanced Arson Investigation (Currently Fire Investigator I and II)
Certification, P.O.S.T. Basic Peace Officer
N.F.A. Fire/Arson Investigation
P.O.S.T. Arson Investigator
IAAI-CFI
NPQ Certified Fire Investigator
NPQ Fire Instructor

TRAINING/CERTIFICATES

Certified Fire Investigator • Fire Instructor • Peace Officer • EMT • Paramedic • Advanced Fire Investigator • Advanced Fire Cause & Origin Expert Witness

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1986 – 2015	Cobb County Fire and Emergency Services

DETAILED PROFESSIONAL EXPERIENCE:

RIMKUS CONSULTING GROUP, INC.

2015 - PRESENT

Fire Consultant

Conduct fire, arson, and explosive investigations including residential, commercial, and vehicular losses for clients. Collect and preserve evidence ensuring a precise chain of custody. Conduct interviews with victims, property owners, witnesses, investigators, and pertinent third party organizations. Photograph scenes and prepare detailed written investigative reports as to the conclusions and opinions of the subject loss. Testify in related depositions and trials.



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
1752 West 1180 South, Suite 8
Woods Cross, Utah 84087
Telephone: (855) 249-6568

July 19, 2019

Re: RCG File No: 100006683
LLV Number: 8217932
VMF Location: 10108 Redwood Road Salt Lake City, Utah
Subject: Preliminary/Final Report

A fire occurred in a LLV on June 8, 2019. This fire occurred at 530 Silver Lane in Alpine, Utah, while being driven by the carrier, Mr. Greg Hawkins. The examination was completed at the Salt Lake City VMF located at 10108 Redwood Road in Salt Lake City, Utah.

Rimkus Consulting Group, Inc. was retained to examine LLV 8217932, VIN 1GBBS10E8K2305195. The work to complete this assignment was conducted by Fire Consultant Dean B. Hunt, IAAI-CFI. This report was reviewed by David R. Meyers, IAAI-CFI (V), Technical Fire Manager.

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. – 1033 "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The area of fire origin was under the steering column just below the steering column mounting bracket.
2. The specific area of origin was at the wiring harness for the turn signal switch located under the steering column. This was at the connection of the harness to the wiring harness from the fuse box. There was no other damage from the fire to the interior.

3. The specific ignition sequence and cause of the fire was determined to be an adverse electrical event at the wiring harness that led from the fuse box to the turn signal wiring harness that had an electrical conductor that had been added. This added electrical conductor bypassed the original wire in the harness for the turn signal. The cable exhibited physical evidence consistent with adverse electrical activity. There was a 25 Amp fuse inserted in a slot that was marked for a 20 Amp fuse. The fuse slot is marked "IGN" for ignition.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. There was no damage from the fire observed to the exterior of the LLV.

Interior Inspection:

In the interior compartment, at the driver's side, the wiring harness for the turn signal switch located under the steering column was damaged from fire. This was at the connection of this harness to the wiring harness from the fuse box. There was no other damage from the fire to the interior. There was no damage to the cargo area.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L, fuel injected with four-fuel injectors. The vehicle had a standard ignition coil. There was no damage from the fire in the engine compartment.

Undercarriage Inspection:

There was no damage from the fire to the undercarriage. The vehicle was mounted on a GM frame.

Fuse Panel Inspection:

There was a 25 Amp fuse inserted in a slot that was marked for a 20 Amp fuse. The fuse slot is marked "IGN" for ignition. This 25 Amp fuse had not blown, however one of the legs of the fuse was melted on the end. All other fuses were of appropriate amperage and were still closed.

Area of Fire Origin:

The area of fire origin was under the steering column just below the steering column mounting bracket.

Potential Contributing Factors:

The wiring harness that led from the fuse box to the turn signal wiring harness had an electrical conductor that had been added. This added electrical conductor bypassed the original wire in the harness for the turn signal.

Evidence Collected:

The turn signal switch with wiring harness, and the wiring harness from the turn signal switch harness to the fuse box was collected. Some fire debris and an electrical conductor connector were collected from the floor below the area where the wiring harnesses were located.

Interviews:

The driver of the LLV indicated that he smelled something burning while he was driving on his route. He pulled over and observed smoke from the dash area under the steering wheel. He then called 911 to report the fire.

Service Records:

A review of the service records provided for the involved LLV did not reveal any recent repairs or work that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Dean B. Hunt

Dean B. Hunt, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

Photograph 1
Exterior of LLV.



Photograph 2
Fire damaged wiring harness connector from the turn signal switch.



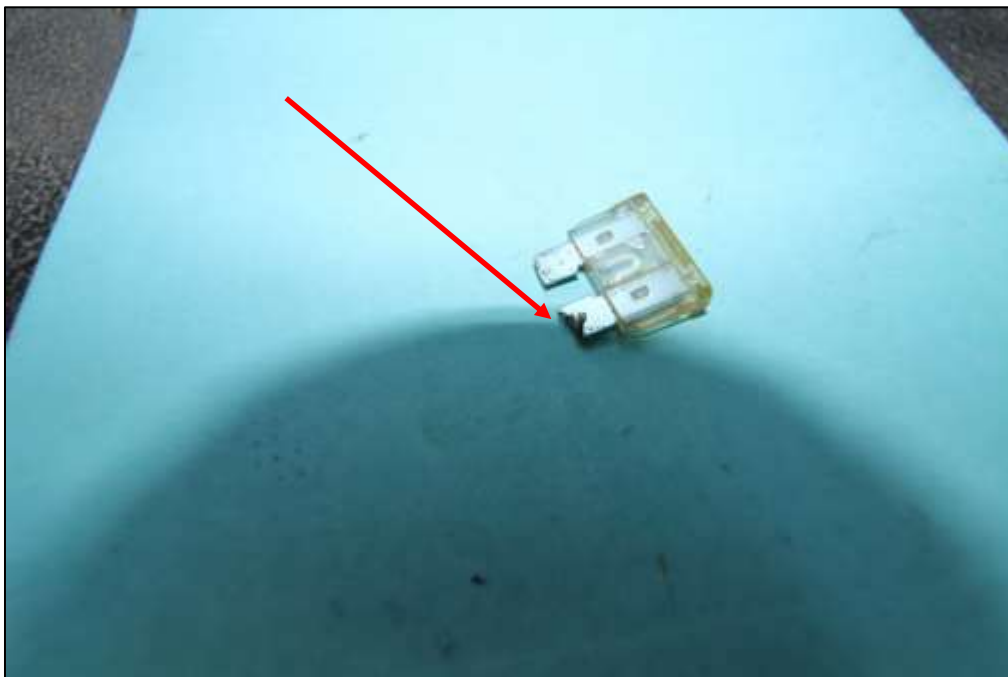
Photograph 3

Fuse box with 25 Amp fuse in a 20 Amp slot for the ignition.



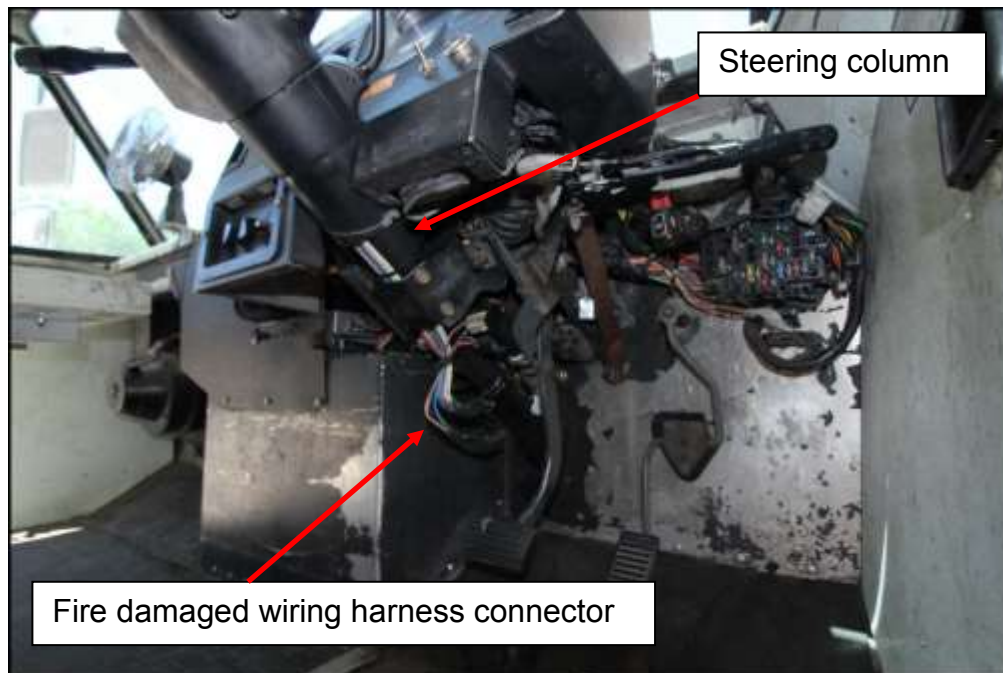
Photograph 4

25 Amp fuse with one leg melted.



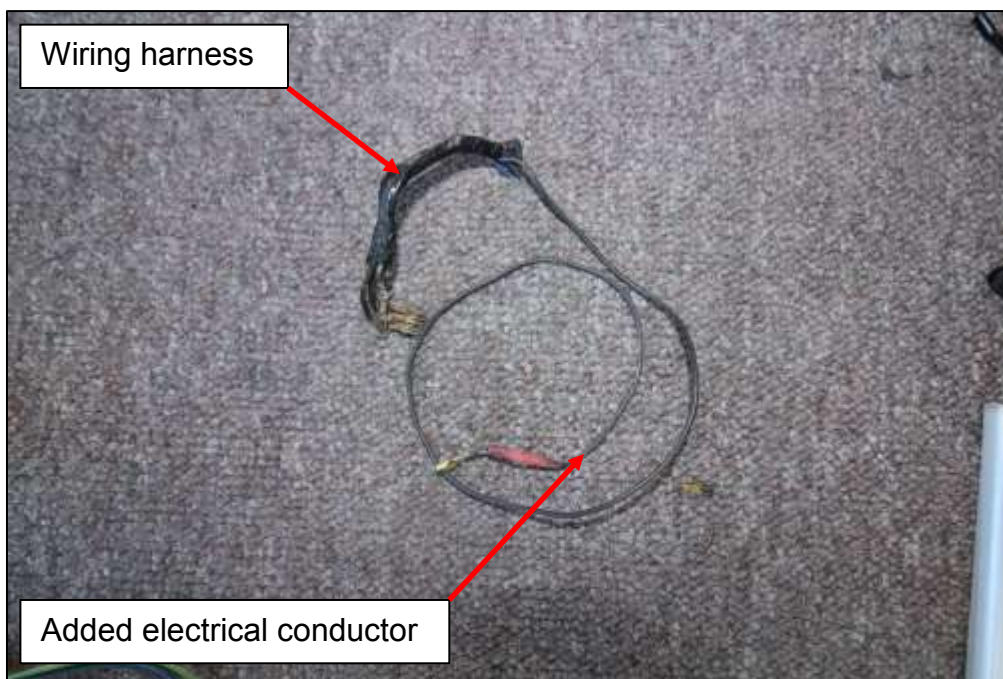
Photograph 5

Area under the steering column.



Photograph 6

Wiring harness from the fuse box to the turn signal switch wiring harness with added electrical conductor.



Curriculum Vitae



Dean B. Hunt, CFEI

Fire Consultant
Fire Division

Background

Along with his B.S. degree in Public Safety and Emergency Management, Mr. Hunt has over 30 years in the fire service with the last 19 years working as a full-time fire investigator and fire marshal.

He is a Certified Fire and Explosion Investigator (CFEI) through the National Association of Fire Investigators as well as a Certified Fire Inspector II with the International Code Council. Mr. Hunt is experienced in the interpretation and enforcement of the International Building Code, the International Residential Code, and the International Fire Code as it relates to fire, life safety and egress in existing buildings and new construction as well as with residential and commercial fire protection systems.

In addition to over 600 fire investigations, Mr. Hunt has conducted over 200 live fire training tests utilizing modern furnishings and materials.

Mr. Hunt has extensive experience in public speaking as well as presenting at both national and local conferences including the National Fire Protection Association (NFPA) Conferences and Vision 20/20 Symposium of Model Programs of Fire Prevention. He has also been recognized for his Fire Prevention Programs in National Fire Academy publications and courses as a 'model program' in Fire Prevention.

Contact Information

(385) 207-2699

dhunt@rimkus.com

1752 West 1180 South,
Suite 8
Woods Cross, UT 84087



Rimkus Consulting Group, Inc.
2630 Elm Hill Pike, Suite 130
Nashville, TN 37214
(888) 235-7423 Telephone
(615) 883-4118 Facsimile

October 11, 2017

Re: RCG File No:

	47305402
LLV Number:	8218428
VMF Location:	112 Riverfront Parkway Chattanooga, Tennessee
Subject:	Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine USPS LLV 8218428, VIN 1GBBS10E9K2305691. The vehicle was examined at the USPS Chattanooga Vehicle Maintenance Facility located at 112 Riverfront Parkway in Chattanooga, Tennessee. The fire incident reportedly occurred during a mail delivery route in the Soddy Daisy, Tennessee area on September 16, 2017.

In the course of our work, we examined and documented the fire damaged vehicle on September 27, 2017. In addition, we obtained the maintenance records from the last 12 months. Our work to complete this assignment was performed by Eastern Region Fire Manager John R. Farill, IAAI-CFI (V). This report and case was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated on the underside right, rear area where the tailpipe assembly was in constant contact with the plastic fuel tank shield of the involved LLV.

2. The specific area of fire origin was determined to be the underside right, rear area where the tailpipe assembly was in constant contact with the plastic fuel tank shield.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of the tailpipe assembly becoming in constant direct contact with the plastic fuel tank shield.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side.

Fire patterns were observed on the driver's side, rear area just above the tailpipe. Fire and damage patterns were observed on the mail side, rear area quarter panel and roll-up door. Burn and damage patterns observed indicated the fire originated on the underside of the vehicle

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe damage had occurred in and around the left rear interior wall and floor area. The damage observed was consistent with radiated and conducted heat from a fire that originated under the vehicle. There were no indications of the fire having originated within the mail/cargo compartment.

Engine Compartment Inspection:

The engine compartment was examined. No fire or heat damage was observed. The fuel filter was intact and located along the rear of the engine near the left side of the transmission. The fuel system was an AC Delco model. The battery for the vehicle was located at the front right side of the engine compartment and had no fire damage. The engine oil, transmission fluid and coolant levels were examined and observed to be within their normal operating range.

Undercarriage Inspection:

The LLV was mounted on a GM frame. The transmission was intact, undamaged, and didn't show any indications of leakage. The exhaust system was intact with no signs of leakage. However, the tailpipe bracket was found unattached to the hanger device that was located on the frame rail above. The normally round tail pipe was observed to have developed an oval shape from hitting objects during the vertical movement up and down. The tailpipe was observed to have been located less than one-half inch from the right side of the fuel tank and plastic shield.

A comparison to an undamaged LLV indicated that the tailpipe connected to the factory mounted hanger system was located approximately four inches from the fuel tank and shield. The plastic shield normally found on the bottom of the fuel tank of the damaged LLV had been mostly consumed on the right side and remnants were found hanging down on the left side where the burning, melted plastic solidified after the fire event.

Burned plastic residue was observed on the rear of the leaf springs located on the right side. Burned plastic residue was found in the area of the tailpipe that was located closest to the right side of the fuel tank. The fuel tank was removed and inspected. There were no indications of any mechanical, heat, or fire damage to the fuel pump assembly or fuel lines located near the top center area of the fuel tank. In addition, the burn and heat damage observed on the fuel filler neck assembly was determined to have been from exterior fire attack during the fire event.

Fuse Panel Inspection:

Examination of the fuse panel and fuses revealed no fire damage, and no fuses had been tripped or blown.

Area of Fire Origin:

Based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, it was determined that the fire originated on the underside right, rear area where the tailpipe assembly was in constant contact with the plastic fuel tank shield.

Contributing Factors:

The contributing factor(s) of this fire event was tailpipe assembly that had become unattached to the factory hanger assembly that allowed the tailpipe to be in constant contact with the plastic fuel tank shield.

Evidence Collected:

No evidence was collected.

Interview:

The carrier was interviewed by phone. She reported the following: She was on her delivery route and was in the process of delivering a package to a customer when she noticed smoke coming from the tailpipe area. She immediately called the fire department and removed the mail from the vehicle.

Service Records:

A review of the provided service records for the involved LLV was conducted. The last scheduled service was completed on November 3, 2016. After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

John R. Farill

John R. Farill, IAAI-CFI (V)
Eastern Region Fire Manager

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

October 11, 2017
RCG File No. 47305402

Photograph 1
A view of the front.



Photograph 2
A view of the driver's side.



October 11, 2017
RCG File No. 47305402

Photograph 3

A view of the rear.



Photograph 4

A view of the mail side quarter panel area.



October 11, 2017
RCG File No. 47305402

Photograph 5

A view of the undamaged dashboard area.



Photograph 6

A view of the undamaged engine compartment area.



Photograph 7

An overall view of the fuel tank and fire damaged fuel tank shield.



Photograph 8

A view of the tailpipe that was found approximately one-half inch from the fuel tank.



Photograph 9

A view showing the unattached tailpipe and factory mounted hanger.



Photograph10

A view showing the normal location of an attached (to the hanger bracket) tailpipe and the undamaged, plastic fuel tank shield.



Photograph 11

A view of the topside of the fuel tank where no leaks were observed as well as no fire or heat damage.



Photograph 12

A view showing the fuel filler neck area where exterior fire attack damage occurred.



October 11, 2017
RCG File No. 47305402

CVs



**JOHN R. FARILL, IAAI-CFI
FIRE DIVISION MANAGER, EASTERN REGION**

Mr. Farill started his public safety career as a police officer in 1984 before transferring to the Palm Beach County Fire Rescue as a Fire Investigator in 2002. As a Palm Beach County fire investigator, he performed fire origin and cause investigations, interview and interrogation of witnesses and suspects, processing of evidence and criminal investigations.

As the lead investigator, Mr. Farill's forensic experience encompasses investigation of more than 850 fires involving fire and explosion causation in industrial settings, residential and commercial structures, vehicles, marine vessels, aircraft and wildland fires. Areas of expertise include management of fire scene analysis, evidence and data collection, monitoring of destructive and non-destructive testing, investigative interviews, scene photography, accelerant testing, and ICC and NFPA fire code compliance. He has provided legal depositions and court testimony in support of legal and technical findings as an expert witness.

Mr. Farill is an IAAI-Certified Fire Investigator, an NFPA Certified Fire Inspector, Florida State Division of State Fire Marshal Fire Investigator II, Municipal Fire Safety Inspector and a Fire Instructor 1. He has received his Pro Board certification through the National Board on Fire Service Professional Qualifications as a Fire Investigator, NFPA 1033. He instructs Fire Origin and Cause classes for college.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Commission on Criminal Justice Standards and Training – Law Enforcement Recruit Training
11/87

Florida Division of State Fire Marshal – Florida State Firefighter II 1/2002

Florida Division of State Fire Marshal – Municipal Fire Safety Inspector 10/2002

Florida Division of State Fire Marshal – Fire Service Instructor 9/2007

Florida Division of State Fire Marshal – Fire Service Investigator II 9/2007

International Association of Arson Investigators – Certified Fire Investigator 11/2006

Florida Department of Agriculture & Consumer Services – Private Investigator 9/2007

Gold Coast Forensic Association

International Association of Arson Investigators

Florida Fire Marshal's and Inspectors Association

EMPLOYMENT HISTORY

2011 – Present

Rimkus Consulting Group, Inc.

2002 - 2011

Palm Beach County Fire Rescue

2001 - 2002

City of Greenacres Public Safety

1987 – 2001

Florida Fish and Wildlife Conservation Commission

1986 - 1987

City of Gulf Breeze Police Department

1984 – 1986

Escambia County, Florida, Sheriff's Department



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1661 East Camelback Road, Suite 124
Phoenix, Arizona 85016
(866) 552-6758 Telephone
(602) 216-2201 Facsimile

February 20, 2019

Re: RCG File No: 01709404
LLV Number: 8218671
VMF Location: 1501 S. Cherrybell Stravenue, Tucson, Arizona
Subject: Preliminary/Final Report of Findings

Dear

On January 24, 2019, a fire occurred involving a 1988 Grumman, LLV 8218671. At the time of the fire, the vehicle was located near 1036 W. Calle De Pitahaya Road in Green Valley, Arizona.

On February 1, 2019, Rimkus Consulting Group, Inc. was retained to examine LLV 8218671. Our inspection of the vehicle occurred on February 11, 2019, at the Vehicle Maintenance Facility. In the course of our work, we completed an on-site inspection of the vehicle, including photographing the vehicle, arc mapping, and witness interviews. The work to complete this assignment was performed by Fire Consultant Thomas D. Kane, IAAI-CFI. This report was technically reviewed by Fire Division Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 – "Guide for Fire and Explosion Investigations", and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator."

Conclusions

1. The fire originated in the engine compartment in the area of the starter motor on the left (mail) side of the vehicle.
2. The specific area of origin was identified as the internal area of the starter motor.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the starter motor and the lack of remaining physical evidence for examination.
4. We could not eliminate an internal failure of the starter motor generating excessive heat coming in contact with the combustible components within the engine compartment.

Observations

Exterior Inspection

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The front grille and lights of the LLV were observed to be intact with no fire damage. Fire damage was observed on the hood of the engine compartment, from the middle of the compartment towards the bulkhead. The hood also showed signs of forcible entry caused by fire department personnel. The aluminum roof of the vehicle that covered the operator's compartment was intact. The doors and frames were intact. Smoke staining was observed to the lower portion of the windshield in the area of the hood and bulkhead area.

No damage was observed to the exterior cargo area of the vehicle. Based on the fire patterns observed, it was determined the fire initiated within the engine compartment near the bulkhead.

There were no obvious signs of pre-fire collision damage. Exterior fire damage was confined to the hood and windshield.

Interior Inspection

The interior cargo/mail area sustained minor smoke damage. Minor smoke damage was observed along the ceiling and upper side walls of the cargo space. Fire debris from the operator's compartment was observed on the floor of the cargo compartment.

The operator's compartment sustained minor fire and heat damage. Fire patterns indicated this was the result of the fire's extension from the engine compartment near the bulkhead/dashboard. The bulkhead was intact on the driver's side. The bundled wiring harnesses on the driver's side connecting from the fuse panel towards the engine control module (ECM) sustained no fire damage. The ECM had been positioned in the center of the dash and was observed with no fire damage.

The cargo area and mail tray were intact with no fire damage. The dashboard sustained minor heat and smoke damage. The driver's seat was not damaged.

Engine Compartment Inspection

The engine compartment was examined. The vehicle was equipped with a GM 2.5-liter (L), four-cylinder engine. The engine was equipped with a throttle body, fuel-injected system. The vehicle had a standard ignition coil. The engine compartment was observed with moderate to severe fire damage. The driver's side contained the brakes master cylinder, battery, alternator, rubber and plastic components, and the majority of the electrical conductors within the compartment. The ignition coil and fuel lines were also on this side. However, this side of the compartment sustained mostly minor fire damage. Most of the components were observed to be intact with very little melting. Fire patterns indicated no fire damage to the front of the engine compartment, including the radiator, fan blades, pulleys, and hoses. No evidence was observed of the fire originating within the brakes, wheel hubs, or tires in the area of the engine compartment.

The majority of damage to the engine compartment occurred on the mail side between the rear of the engine block and along the bulkhead/dashboard. Fire patterns indicated this was the area of origin. Various conductors and switches connecting to the mail-side headlights, flashers, heater, and fan blower motor were located in this area and were observed with severe fire damage. The spark plugs, plug wires, and rubber boots were located a little further towards the front of the engine compartment and were intact, except the plug wires had apparently been consumed by the fire. The fuel lines came up along the rear of the engine and turned to the driver's side of the engine compartment. The fuel lines were observed to be intact in this area. Fire patterns indicated the fire originated further to the mail side along the engine block at the starter motor where they extended into the engine compartment.

The battery for the vehicle was located at the front driver's side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found with no fire damage and no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid, and brake fluid were examined and observed to be within their normal operating range.

The mail side of the engine compartment sustained severe damage to the electrical system. Most of the wiring insulation had burned away. All of the remaining engine components were intact and readily identifiable. There were no signs of any fuel or fluid leaks. Most of the plastic and rubber engine components sustained heat damage and were partially melted.

Undercarriage Inspection

No fire damage was observed to the majority of the underside of the vehicle, except for a limited area below the rear of the engine compartment that appears to have been

caused by drop down from above. Fuel lines on the undercarriage were intact along the mail-side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulkhead. All four tires were intact.

Heat damage was observed on the exterior housing for the starter motor. The electrical connections were secure and the wiring insulation was observed burned away. The lowest area of fire damage was observed on the starter motor housing.

Area of Fire Origin

The area of fire origin was located within the starter motor.

Potential Contributing Factors

The area of fire origin was located within the starter. A failure within the starter could result in resistive heating to the attached electrical conductors and ignition of the wiring insulation, and any nearby combustible materials. This scenario would result in a slow, smoldering fire prior to ignition. The driver's statement is consistent with this type of ignition scenario.

Evidence Collected

No evidence was collected.

Service Records

Based upon our review of the vehicle's maintenance records, no work to repair or replace the starter was completed on this vehicle within the past year.

Witness Statements

The carrier stated that during his shift he noticed that the vehicle was getting more difficult to start and that there was a slight electrical burning odor prior to the fire. He saw smoke coming from the engine compartment and upon opening the hood, observed flames coming up from the area of the starter.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to

us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Thomas D. Kane

Thomas D. Kane, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

February 20, 2019
RCG File No. 01709404

Photograph 1
LLV 8218671.



Photograph 2
Rear area.



February 20, 2019
RCG File No. 01709404

Photograph 3
Mail side.



Photograph 4
Engine compartment.



February 20, 2019
RCG File No. 01709404

Photograph 5
Mail side.



Photograph 6
Cargo area.



February 20, 2019
RCG File No. 01709404

Photograph 7
Driver's seat and dashboard.



Photograph 8
Engine compartment.



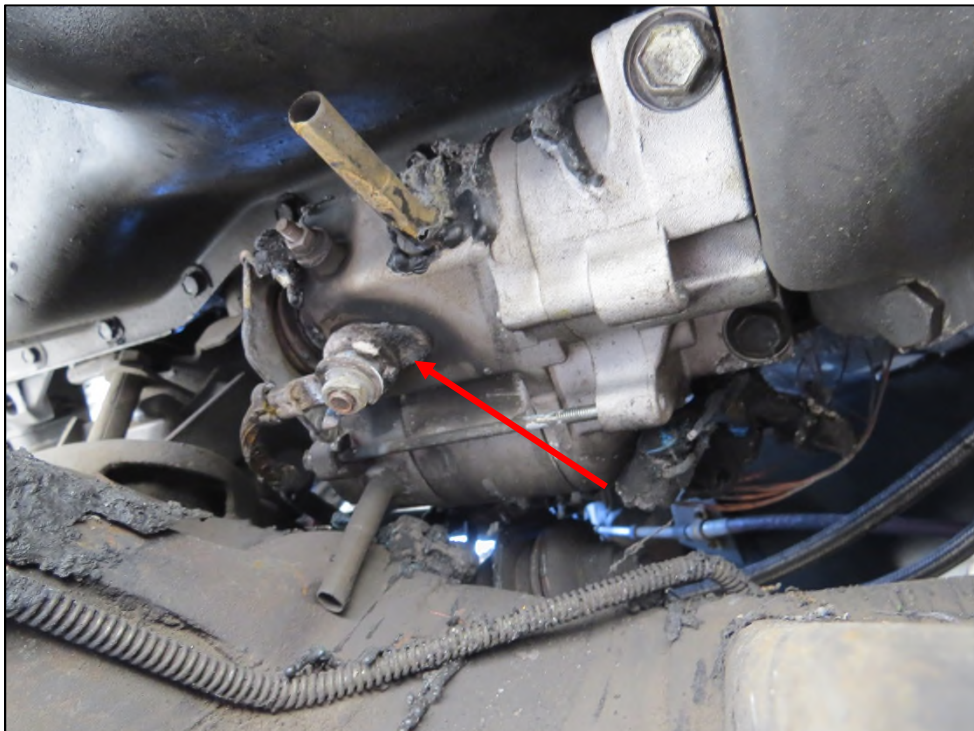
Photograph 9

Burned wiring in engine compartment.



Photograph 10

Heat patterns on exterior housing for starter, at wiring connection.



February 20, 2019
RCG File No. 01709404

Curriculum Vitae



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road, Suite 224
Atlanta, GA 30339
(770) 436-9399 Telephone
(770) 438-2189 Facsimile

August 25, 2016

Re: RCG File No: 50806001
LLV Number: 9200182
VMF Location: 3900 Crown Road in Atlanta, Georgia
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 9200182, VIN 1GBBS10E1K2306205. The vehicle was examined at the USPS Atlanta VMF located at 3900 Crown Road in Atlanta, Georgia. The fire incident reportedly occurred on June 23, 2016.

In the course of our work, we examined and documented the fire damaged vehicle on June 30, 2016. Our work to complete this assignment was performed by Fire Consultant, Mr. Gregory M. Cloer, IAAI-CFI. This report and case was reviewed by Mr. Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the fuel filter on the mail side of the engine compartment.

3. The specific ignition sequence and cause of the fire was determined to be the result of a probable loose connection at the fuel filter which allowed atomized gasoline to be sprayed onto the hot surface of the exhaust manifold and ignite.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. The roof above the passenger compartment and front sides of the passenger compartment had been consumed during the fire event. The cargo compartment walls, roof, and rear door remained intact.

Interior Inspection:

Examination of the interior of the vehicle revealed that most of the combustible materials in the passenger compartment and the bulkhead had been consumed during the fire event. The rear cargo compartment remained intact.

Engine Compartment Inspection:

The engine compartment was examined. The most severe fire damage was observed in the engine compartment at the rear of the engine in the area of the fuel filter. The fuel filter was an AC Delco model and was located along the left rear side of the engine. The engine fuel lines were also located along the left side of the engine. An examination of the fuel filter revealed the top fuel line connector was loose at the fuel filter.

The battery had sustained severe fire damage. The electrical conductors in the engine compartment were examined. There was no adverse electrical activity observed on the electrical conductors within the engine compartment.

The engine oil and transmission fluid were examined and observed to be within their normal operating range.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire patterns extending from the undercarriage of the vehicle. The LLV was mounted on a GM frame and had sustained some damage to the left frame rail below the engine. This damage is consistent with the fuel filter and fuel lines failing during the fire event. The fuel tank and fuel lines

along the frame rail did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment. The specific area of origin was located at the fuel filter. The exhaust system hot surface ignition of atomized gasoline from the loose connection at the fuel filter cannot be eliminated as the cause of the fire.

Contributing Factors:

It was reported that the vehicle was making "clicking" noises and stopped running prior to the fire event.

Evidence Collected:

The AC Delco fuel filter along with portions of the upper and lower fuel lines were collected as evidence and were submitted to Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager. The collected evidence was consistent with the cause of the fire.

Interviews:

On July 7, 2016, an e-mail was sent to Manager of Customer Services, requesting the carrier of LLV 9200182, to contact Rimkus for a telephone interview. Receipts of delivery and the opening of the e-mail were received on July 7, 2016. On July 17, 2016, a follow-up e-mail was sent to the manger. A delivery receipt was received on July 17, 2016.

On July 19, 2016, an interview was conducted with the carrier, who reported the following:

- She had been assigned LLV 9200182 for the last two years. She drives the vehicle Monday through Friday.
- She had reported various mechanical problems with the vehicle to her supervisor since been assigned LLV 9200182.
- Since the beginning of 2016, she reported that LLV 9200182 had stopped running approximately four times during her route. She would call her

supervisor and a mechanic would respond to her location to perform a repair. She does not recall specific dates or times when this problem had occurred.

- On one occasion, she was driving up a hill and noticed light smoke coming from the left side of the engine compartment. She turned the vehicle off and the smoke dissipated. A mechanic responded to her location and performed a repair.
- On the day of the fire event, she started driving the vehicle at 10:30 A.M. She had completed her route and was returning to the post office when the vehicle made "clicking" noises and the passenger compartment began to fill with smoke. The engine stopped running and she was able to pull the vehicle to the side of the highway. She observed smoke near the center of the vehicle at the base of the windshield and dashboard.
- She evacuated the vehicle and called 9-1-1.
- She reported that she had sustained smoke inhalation and was treated by her primary physician.

Service Records:

A review of the service records indicated multiple occasions of reports that the vehicle was shutting off or would not turn over. There were no recent repairs listed that involved the fuel filter or fuel delivery system listed.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 25, 2016
RCG File No. 50806001

Photograph 1

View of the front and passenger sides of LLV 9200182.



Photograph 2

View of the rear and driver sides of LLV 9200182.



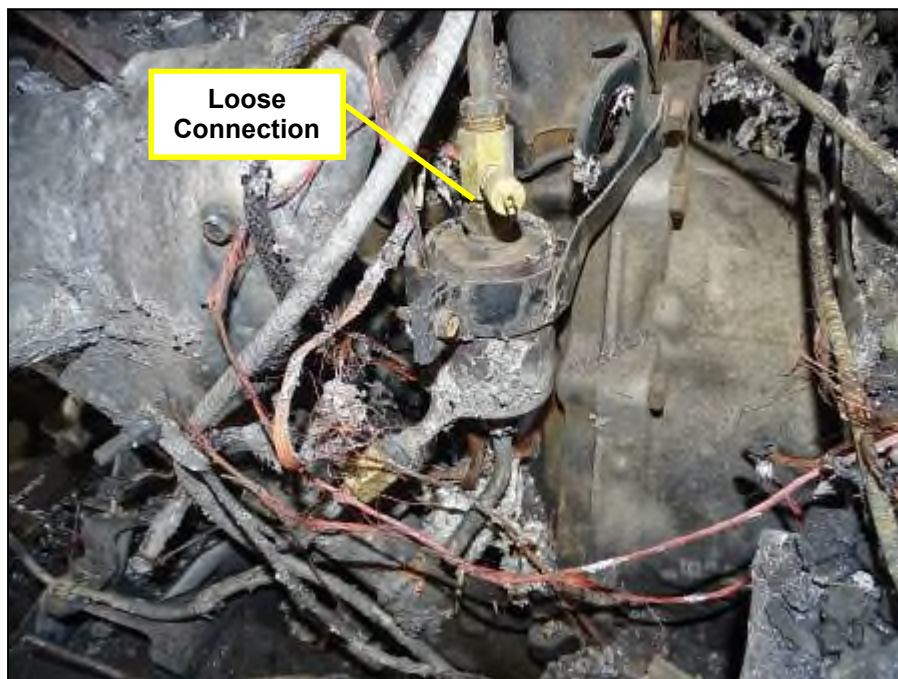
Photograph 3

View of the engine compartment.



Photograph 4

View of the AC Delco fuel filter.



August 25, 2016
RCG File No. 50806001

Photograph 5

View of the evidence collected.



August 25, 2016
RCG File No. 50806001

CVs



**GREGORY M. CLOER, C.F.I.
FIRE CONSULTANT**

Mr. Cloer is a Certified Fire Investigator (C.F.I.) by Georgia P.O.S.T., NPQ, N.F.A. and IAAI for fire/arson investigation, and is certified by Georgia P.O.S.T. as a basic peace officer. Mr. Cloer has also served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting & prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator. Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. Mr. Cloer has testified as an expert in criminal court related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certification, P.O.S.T. Basic and Advanced Arson Investigation (Currently Fire Investigator I and II)
Certification, P.O.S.T. Basic Peace Officer
N.F.A. Fire/Arson Investigation
P.O.S.T. Arson Investigator
IAAI-CFI
NPQ Certified Fire Investigator
NPQ Fire Instructor

TRAINING/CERTIFICATES

Certified Fire Investigator • Fire Instructor • Peace Officer • EMT • Paramedic • Advanced Fire Investigator • Advanced Fire Cause & Origin Expert Witness

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1986 – 2015	Cobb County Fire and Emergency Services

DETAILED PROFESSIONAL EXPERIENCE:

RIMKUS CONSULTING GROUP, INC.

2015 - PRESENT

Fire Consultant

Conduct fire, arson, and explosive investigations including residential, commercial, and vehicular losses for clients. Collect and preserve evidence ensuring a precise chain of custody. Conduct interviews with victims, property owners, witnesses, investigators, and pertinent third party organizations. Photograph scenes and prepare detailed written investigative reports as to the conclusions and opinions of the subject loss. Testify in related depositions and trials.



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
8200 Cameron Road, Suite C-140
Austin, Texas 78754
Telephone: (800) 783-8557
Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2019

September 26, 2019

Re: RCG File No: 100013355
LLV Number: 9200406
VMF Location: 8601 Stinson Avenue El Paso, Texas
Subject: Preliminary/Final Report

Dear,

On August 28, 2019, a fire occurred involving US Postal Service LLV 9200406, VIN 1GBBS10E5K2306238. The fire caused damage to the vehicle, rendering it inoperable. No injuries or fatalities were reported.

Rimkus Consulting Group, Inc. was retained to conduct an investigation into the origin and cause of the fire. The investigation was assigned to and completed by Fire Consultant Nicholas Olson, IAAI-CFI (V). A technical review of this report was completed by Technical Fire Manager David R. Meyers IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated within the engine compartment, in and around the bulkhead area.
2. Ignition scenarios included an electrical failure that caused the failure of the control arm and a possible fuel leak.

3. The fuel system was pressurized, and no leaks were located, thereby eliminating it as a possible cause of the fire. A fire resulting from an electrical failure secondary to the control arm failure cannot be eliminated as a possible ignition scenario. It is possible the control arm failure caused the unfused, positive starter cable to come in contact with the frame of the vehicle. This would have caused short circuit between the positive battery cable and the negative ground of the frame. This scenario would have resulted in resistive heating of the positive cable between the short and the battery. This heating could have been sufficient to melt and subsequently ignite available plastics and other combustible materials.
4. The positive battery cable is clearly severed near the upper control arm failure. However, upon further examination, the point where the positive battery cable shorted to the frame was unable to be clearly identified; therefore this scenario can only be listed as the most probable cause of the fire.

Observations

Exterior Inspection:

The vehicle exhibited fire damage to the windshield and hood. Minor smoke staining and soot deposit were noted along the upper edges of the door openings. No obvious pre-fire damage was noted.

Interior Inspection:

Fire damage was exhibited throughout the interior cab. Loss of mass was observed to the dash, bulkhead and floor in the center of the vehicle. Damage of varying degrees was noted to the remaining interior cab and cargo area.

Engine Compartment Inspection:

The engine compartment exhibited heat, smoke and fire damage of varying degrees. The most severe damage was noted in and around the rear of the engine compartment and was centered around the rear of the engine, on the exhaust side. Loss of mass was noted to the bulkhead in this area. A corresponding clean burn was noted on the underside of the hood. Melting of plastics and wire insulation was noted on the driver's side of the engine compartment as well. The insulating material installed on the bulkhead was uniformly consumed across the width of the vehicle. The vehicle was equipped with a 2.5 Liter engine with a standard ignition coil.

Undercarriage Inspection:

The undercarriage of the vehicle exhibited no fire damage. Physical damage was noted to the driver's side, front upper control arm. It was broken from its mount and contacted the frame of the vehicle. It appeared to have pinched the main, positive starter cable between the control arm and frame. No evidence of obvious electrical activity was located at the point where the cable was pinched. A loss of cable insulation was noted between the pinched point and the battery. Examination of the interior of the insulation indicated it had been subject to heating at some point. The vehicle was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel was examined and no fire damage was observed and no fuses were observed blown.

Area of Fire Origin:

The fire originated within the engine compartment, in and around the bulkhead area.

Potential Contributing Factors:

Ignition scenarios included an electrical failure caused the failure of the control arm and a possible fuel leak. The fuel system was pressurized and no leaks were located, thereby eliminating it as a possible cause of the fire. A fire resulting from an electrical failure secondary to the control arm failure cannot be eliminated as a possible ignition scenario. It is possible the control arm failure caused the unfused, positive starter cable to come in contact with the frame of the vehicle. This would have caused a short circuit between the positive battery cable and the negative ground of the frame. This scenario would have resulted in resistive heating of the positive cable between the short and the battery. This heating could have been sufficient to melt and subsequently ignite available plastics and other combustible materials. The positive battery cable is clearly severed near the upper control arm failure. However, upon further examination, the point where the positive battery cable shorted to the frame was unable to be clearly identified; therefore this scenario can only be listed as possible at this time.

Evidence Collected:

No physical evidence was collected.

Interviews:

An interview was attempted, but no return calls have been made. A statement was made that the control arm broke and a fire followed within the engine compartment.

Service Records:

Requests for the service records was made with the VMF manger, but have not been received.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Nicholas J. Olson

Nicholas J. Olson, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

September 26, 2019
Rinkus File No. 100013355

Photograph 1

Involved vehicle as presented for inspection.



Photograph 2

Interior of involved vehicle.



September 26, 2019
Rimkus File No. 100013355

Photograph 3
Engine compartment.



Photograph 4
Area of fire origin, along bulkhead, rear of engine compartment.



September 26, 2019
Rinkus File No. 100013355

Photograph 5

Broken control arm, driver's side.



Photograph 6

Damaged positive starter cable.



September 26, 2019
Rinkus File No. 100013355

Curriculum Vitae



Nicholas J. Olson, CFI(V), CFEI, CVFI

Fire Consultant
Fire Division

Background

Mr. Olson is a Certified Fire Investigator (CFI) by the International Association of Arson Investigators (IAAI) and a Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators (NAFI). Additionally, he holds the Motor Vehicle Fire credential endorsement through the IAAI and is also a Certified Vehicle Fire Investigator (CVFI) through NAFI. Mr. Olson holds active certifications in Texas as a Fire Investigator, Master Peace Officer, Firefighter, Fire Inspector, and Paramedic. Mr. Olson also has an associate degree in Criminal Justice and continues his pursuit of education through extensive continuing education and professional development training.

Mr. Olson has extensive experience in both the fire service and law enforcement with 19 years of service as a public safety professional and continues to serve as a firefighter, paramedic and police officer. Mr. Olson has experience in all facets of fire and explosion investigation procedures in both the public and private sector. Through his work, he has and developed positive working relationships with numerous local, state, and federal authorities.

As a full-time fire investigator, Mr. Olson's experience includes determining the origin and cause of fires in residential and commercial structures, vehicles, watercraft, heavy equipment and wildland areas. Mr. Olson has provided testimony in both criminal courts and civil depositions. He regularly provides continuing education presentations to insurance and subrogation professionals. Mr. Olson maintains a current, working knowledge of the latest edition of National Fire Protection Association (NFPA) 921, Guide for Fire and Explosion Investigations. Additionally, he has satisfied the educational requirements for all 16 job performance requirements as set forth by the 2014 edition of NFPA 1033, Standard for Professional Qualifications for Fire Investigator.

Contact Information

(512) 795-0811
njolson@rimkus.com

8200 Cameron Rd.
Suite C-140
Austin, TX 78754



Rimkus Consulting Group, Inc.
13900 Alton Parkway Suite 123
Irvine, California 92618
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

November 26, 2018

Re: RCG File No: 71807358
USPS LLV Number: 9201380
Inspection Location: 11151 Valley Boulevard El Monte, California
Preliminary/Final Report

Subject: Dear

On October 13, 2018, a fire involving USPS LLV 9201380 occurred. LLV 9201380 was examined at the Post Office facility located at 11151 Valley Boulevard in El Monte, California.

Rimkus Consulting Group, Inc. was retained to examine LLV 9201380, to determine the cause of the fire. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V). In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on October 29, 2018. During our investigation, we conducted an examination of the fire damaged LLV and documented the vehicle with photographs. The LLV was parked in the Post Office facility secured lot at the time of the fire and was last operated at approximately 4:30 P.M. on Friday October 12, 2018, approximately 28 hours prior to the fire.

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be on the left side of the engine compartment.
3. The specific ignition sequence and cause of the fire was inconclusive due to the near complete fire destruction of the LLV and inability to manipulate or elevate the LLV to perform a complete examination at the Post Office facility.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The vehicle sustained severe fire damage and mass loss to all areas except at the lower rear section where the rear tires, bumper, and lower sections of the rear, right and left panels were not fire damaged.

Based on the fire patterns observed, it was determined the fire initiated within the engine compartment along the left side of the engine block near the bulkhead/dashboard then progressed into the operator's compartment through the windshield and bulkhead.

Interior Inspection:

The interior compartment sustained severe fire and heat damage. Most of the combustible materials located within this area were consumed by the fire, including the fuse panel and various electrical conductors in the dashboard area on the driver's side. Fire patterns indicated this was the result of the fire's extension from the engine compartment near the bulkhead/dashboard on the mail side. The most severe damage was observed on the mail side of the compartment, where the bulkhead had completely burned through from the direction of the engine compartment. The bulkhead was mostly intact on the driver's side. The bundled wiring harnesses on the driver's side connecting from the fuse panel towards the Engine Control Module (ECM) sustained severe fire damage. The ECM had been positioned in the center of the dash and was observed with severe fire damage. The burn through hole in the bulkhead was observed to the left of the ECM. The remnants of an electric fan was found in the fire debris along the burned through area of the bulkhead.

All visible areas of the LLV interior sustained severe fire damage which resulted in molten and warped metal components and consumption/charring to all combustible components.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment was observed with severe fire damage and mass loss to the combustible materials within the engine compartment. The driver's side contained the brakes master cylinder, battery, alternator, rubber and plastic components and the majority of the electrical conductors within the compartment. The ignition coil and fuel lines were also on this side. However, this side of the compartment sustained less severe fire damage than the mail side of the engine compartment. Most of the components were observed to be intact however observed with severe fire damage. Fire patterns indicated that the severe damage to the front of the engine compartment, including the radiator, fan blades, pulleys and hoses were caused by radiated heat originating from the left side area of the engine compartment. No evidence was observed of the fire originating within the brakes, wheel hubs or tires in the area of the engine compartment.

The majority of damage to the engine compartment occurred on the mail side between the rear of the engine block and along the bulkhead/dashboard. Fire patterns indicated this was the area of origin. Various conductors and switches connecting to the mail side headlights, flashers, heater and fan blower motor were located in this area and were observed with severe fire damage. The spark plugs, plug wires and rubber boots were located a little further towards the front of the engine compartment and were intact, except the plug wires had apparently been consumed by the fire. The fuel lines came up along the rear of the engine and turned to the driver's side of the engine compartment. The fuel lines were observed to be intact in this area. Fire patterns indicated the fire originated further to the mail side along the bulkhead where they extended into the mail side of the operator's compartment.

The battery for the vehicle was located at the front driver's side of the engine compartment. The battery, the battery terminals, and battery cables were examined and found to be severely damaged by fire attached however intact; no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The engine oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range.

All visible areas of the LLV engine compartment sustained severe fire damage and mass loss which resulted in molten and warped metal components and consumption/charring to all combustible components. The area observed with the most severe fire damage was observed at the left side of the engine compartment, and included severe fire damage to the left front quarter panel, tire/wheel, hood, and left-side engine compartment components.

Undercarriage Inspection:

Inspection of the undercarriage could not be completed at the inspection location due to our inability to elevate the LLV and access the undercarriage. Additional equipment will be required for additional examination of the undercarriage. However, the fuel lines on the undercarriage appeared intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system appeared intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the left of the engine compartment along the bulkhead. All four tires appeared intact at the time of the fire.

Fuse Panel Inspection:

The fuse panel positioned behind the instrument panel in the dashboard on the driver's side sustained severe fire damage. However, no evidence of adverse electrical activity was observed. The respective wiring harness associated with the fuse panel was inspected and did not reveal any unexpected damages from a fire with this intensity.

Area of Fire Origin:

Based on the observed fire patterns it was determined that the fire originated within the engine compartment along the left side of the engine block.

Potential Contributing Factors:

The starter motor issue and replacement on or about August 24, 2018, may be a contributing factor. We recommend moving the LLV to the VMF facility in La Puente, California, to allow a more complete examination in an attempt to identify the cause of this incident if so warranted.

Evidence Collected:

No evidence was collected

Interview:

No witnesses to the fire were identified. The vehicle was parked at the post office in El Monte, California and was not used the day of the fire. The vehicle was not in service due to an issue with the back door. The fire was discovered by an El Monte Police Officer passing by and the fire department was notified. Upon their arrival the vehicle was fully involved with fire.

Service Records:

Service records were obtained and reviewed. The starter motor replacement was conducted on or about August 24, 2018. The last preventive maintenance was completed on May 2, 2018. Recent service or repairs completed on this vehicle may have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

November 26, 2018
RCG File No. 71807358

Photograph 1

Subject LLV. Right side and front.



Photograph 2

LLV left side and rear.



November 26, 2018
RCG File No. 71807358

Photograph 3
LLV left side and front.



Photograph 4
LLV engine compartment, left side.



November 26, 2018
RCG File No. 71807358

Photograph 5

The interior of the vehicle.



Photograph 6

The undercarriage of the vehicle.



November 26, 2018
RCG File No. 71807358

Curriculum Vitae



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road, Suite 224
Atlanta, Georgia 30339
(770) 436-9399 Telephone
(770) 438-2189 Facsimile

September 20, 2018

Re: RCG File No: 50808547
LLV Number: 9202593
VMF Location: 3900 Crown Road SW Atlanta, Georgia
Subject: Preliminary/Final Report

Dear

On August 10, 2018, a fire involving USPS LLV vehicle LLV 9202593, VIN 1GBBS10E5K2308572 reportedly occurred while the carrier was on her route at 1275 Daniel Road in Villa Rica, Georgia. The vehicle was manufactured by General Motors in 1993 and was a Grumman model LLV-89 RH.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Atlanta VMF located at 3900 Crown Road SW in Atlanta, Georgia. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on September 10, 2018. The vehicle examination was conducted by Fire Consultant Mathew C. Bolen, CFI. This report was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations" and NFPA 1033 "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment on the lower left side of the engine near the transmission.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate transmission failure as being a source of this fire. We could not eliminate the fuel lines that are in close proximity to the transmission as being a source of this fire as well.
5. The rear interior storage mail/compartament was not directly involved in this fire, however heat and flames did spread to that area. It did sustain severe heat and smoke damage and significant heat and flame impingement on the front part of the compartment.

Observations

Exterior Inspection:

Examination of the vehicle began at the rear exterior and continued in a clockwise direction. The rear of the vehicle showed severe charring and blistering at the top part of the roll up door. This was indicative of high heat inside the rear interior mail compartment.

Based on fire patterns observed, the fire was burning from the left (mail side) to the right (driver's side) and rolling from top to bottom. Going in a clockwise pattern the left side of the rear mail compartment was unremarkable until the area of the mail side door. From the area of the mail side door to the front bumper, there was very little left of the vehicle. The mail side door was in the rear compartment of the vehicle after the fire, most likely placed there by fire crews. This door being intact when the fire started helped with the heat and fire conditions on the mail side of the vehicle. The lower body rail and pieces of the step were left but they were severely damaged. The front left tire was completely destroyed by the fire with no remains left on the wheel. The mail side of the vehicle was completely destroyed.

The front bumper of the vehicle and the headlights did remain intact. There was severe damage to the left front headlight with minimal damage to the right front headlight area. The hood and roof areas above the headlights were completely destroyed, with both A-posts of the vehicle being completely destroyed. There was no roof left on the vehicle as it all burned from direct flame impingement. The roof was missing from the front of the vehicle to the rear mail compartment.

The driver's side of the vehicle from the front of the front bumper back to the rear mail compartment was observed with complete mass loss. The only thing visible from the driver's side of the vehicle was the front right tire, it was flat but still in one piece, the

steering column and the seat area were both completely consumed. There was severe fire damage on the right side of the vehicle with some items remaining but badly burned. The rear mail compartment did have a burn pattern at the top of the compartment, but there were no signs of severe fire damage on that side of the rear mail compartment.

Interior Inspection:

Interior inspection of the vehicle revealed severe damage to the driver's compartment of the vehicle. The driver's compartment was destroyed on both sides of the vehicle with the damage being worse toward the front of the vehicle and moving to the rear of the vehicle. The interior of the rear mail compartment was also severely damaged by fire and heat. The fire appeared to enter the rear main compartment through the open door which was located more to the left side of the vehicle. The heat and flames spread from the left side of the vehicle through to the rear causing severe damage to the top left portion of the rear compartment and rear door.

Engine Compartment Inspection:

Examination of the engine compartment was completed. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment was observed with severe fire damage and a large quantity of mass loss throughout. The hood of the vehicle was not at the examination sight leading us to believe it was completely consumed. The engine compartment had the most destructive damage on the left side of the engine. This was where the fuel lines were and where the fire most likely originated.

The fire progressed from the left side of the engine compartment from the bottom of the engine upwards toward the front and right side of the engine. The damage to the engine compartment was substantial with mass loss and a lack of remaining physical evidence to examine.

Undercarriage Inspection:

The undercarriage of the vehicle was observed with liquid residue on the frame from the middle of the vehicle toward the front. The rear of the undercarriage was unremarkable. The undercarriage had sustained severe fire damage on the left side of the vehicle in the area of the transmission and fuel lines. The LLV was mounted on a GM general frame.

Fuse Panel Inspection:

There was no fuse panel remaining to examine due to severe fire damage to the area.

Area of Fire Origin:

The area of origin was determined to be on the left side of the engine (mail side) in the area of the transmission and the fuel filter.

Potential Contributing Factors:

Factors contributing to the fire appear to be a failure of the transmission thus causing damage to the fuel lines that run along the side of the transmission. The damage to the transmission may have ruptured the fuel lines leaving fuel and fuel gases to ignite from either the heat of the engine and transmission or an unknown ignition source. The transmission does have a large hole in the left side of it right by the fuel filter. It appears the intense heat of the fire melted the fuel lines causing them to be turned in a ninety degree angle from their original position.

Evidence Collected:

There was no evidence collected.

Service Records:

A review of the provided service records for the involved LLV was conducted. Service records reveal several issues with the transmission and the fuel pump over a period of time prior to the fire. The last preventive maintenance was conducted on August 8, 2018, two days prior to the fire.

After a review of the service records, it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance performed on the vehicle may have contributed to the cause of the fire.

Interview:

The mail carrier, Ms. was interviewed by phone on September 10th, 2018. Ms. stated that when she started her route the vehicle felt like the emergency brake was on. She stated the vehicle wasn't pulling right and that something was wrong. She said she drove it for a ways then stopped to call it in and ask for her supervisor to send a tow truck. She then stated her phone cut out due to the area she was in so she decided to pull up to the top of the hill to get better signal. She stated that when she got to the top of the hill she began smelling smoke. She stated she got out of the vehicle and saw more smoke coming from under the hood. She then called her supervisor back and advised them to call the fire department and to send another truck for her. She stated at this time she could see flames dropping down under the vehicle with smoke coming from under the hood. Ms. stated that another carrier had

issues with this vehicle earlier in the week and that the transmission was worked on then as well.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Mathew C. Bolen

Mathew C. Bolen, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curricula Vitae

September 20, 2018
RCG File No. 50808547

Photograph 1

The rear of the vehicle. Note the blistering and burn patterns from the top left corner downward.



Photograph 2

The mail side of the vehicle. Note the low burn patterns on the step going from front to rear. Also note the front tire was missing due to low heavy damage in the left front.



Photograph 3

The front of the vehicle showing the fire burned from left to right as evident by the left from corner. The damage to the lower part of the vehicle was indication of the fire originating lower in the engine compartment.

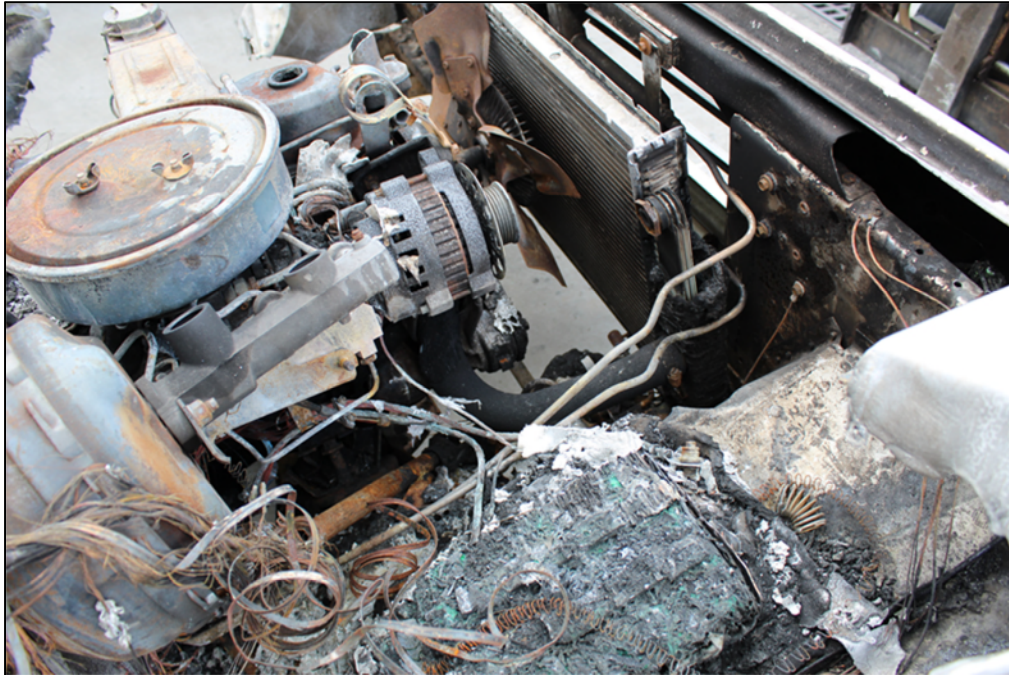


Photograph 4

Damage to driver's side and front of the vehicle was equally as bad as the left side. It appeared the fire traveled from left to right in the engine compartment before consuming the driver's compartment.



Photograph 5
The engine compartment.



Photograph 6
The undercarriage looking towards the front and the damage around the transmission.



September 20, 2018
RCG File No. 50808547

Curricula Vitae



MATHEW C. BOLEN, CFI FIRE CONSULTANT

Mr. Bolen is a Certified Fire Investigator by the State of Georgia, a Certified Peace Officer with the State of Georgia, a Certified Fire Inspector with the State of Georgia, International Code Council, and the National Board on Fire Service Professional Qualifications, a nationally registered Paramedic, and a Fire Service Instructor, as well as a Public Fire Safety Educator with the National Board on Fire Service Professional Qualifications.

Mr. Bolen started his public safety career in 1991 with the City of Cartersville, overseeing the Community Service Program. In 1995, he transferred to the City of Cartersville Fire Department where he began his career in the fire service. In 1999, Mr. Bolen moved to the City of Marietta Fire Department, where in 2003, he began his career as a Fire Investigator and was responsible for cause and origin investigations, interviews, evidence collection, and photographic documentation, scene diagrams, and other aspects of fire investigations. Mr. Bolen has assisted or been lead investigator in over 150 investigations.

From 2005 to 2008, Mr. Bolen served as Firefighter Engineer with the Fire Department. He resumed as an Investigator with the Marietta Fire Department in 2008. Mr. Bolen was appointed as Lead Investigator of the Marietta Fire Department in 2015, where he remains today.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S. – Reinhardt University – Criminal Justice
A.A.S. – Fire Science – Chattahoochee Technical College
Georgia State Certified EMT – Certification Number – B1307269
Hazardous Material Technician
Georgia Certified Paramedic – Certification Number – 6841
Nationally Registered Paramedic – Certification Number – M0946157
State of Georgia Fire Inspector – Certification Number – 267787
State of Georgia Arson Investigator
State of Georgia Fire Instructor – Certification Number - 267786
Tactical Paramedic
Swift Water Rescue Instructor
National Professional Qualifications (NPQ) Evaluator
State of Georgia Emergency Manager
Georgia Fire Inspectors Association
Georgia Fire Investigators Association

LICENSES AND CERTIFICATIONS

National Board of Professional Qualifications – Certificate Number NFPA-1031-2003
National Board of Professional Qualifications – Certificate Number – NFPA-1041-2002
State of Georgia Post Certified Investigator – Certificate Number – PS0720160007S
National Registry EMT – License Number – B1307269
National Registry Paramedic – License Number – P0946157
International Code Council – Inspector 1 – Certificate Number – 8784114
State of Georgia Firefighter – Firefighter 1 – Certificate Number 20-1507oc-96



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
4801 Northwest Loop 410, Suite 700
San Antonio, TX 78229
(866) 202-3747 Telephone
(210) 520-4357 Facsimile
Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2017

January 19, 2017

Re: RCG File No:

LLV Number: 30303476
VMF Location: 9202731
Subject: 8601 Stinson Avenue in El Paso, Texas
Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine LLV 9202731, VIN 1GBBS10E8K2308713. The vehicle was examined at the USPS El Paso VMF located at 8601 Stinson in El Paso, Texas. The fire incident occurred on November 30, 2016, near the intersection of East Las Cruces Avenue and North Compo Street in Las Cruces, New Mexico.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on December 21, 2016. Our work to complete this assignment was performed by Fire Consultant Nicholas Olson, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the mail side of the engine compartment around the area forward of the air cleaner where the fuel line was routed.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of the ignition of gasoline vapors by a competent ignition source in the area of fire origin related to tears in the fuel regulator diaphragm.

Observations

Exterior Inspection:

For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The vehicle was intact with no obvious fire damage visible during the exterior inspection. Very minor soot staining was noted upon detailed inspection of the gaps between the hood and body. Other than normal wear, no obvious unrelated damage was noted.

Interior Inspection:

The interior operator compartment of the vehicle exhibited no visible fire or smoke damage. No obvious unrelated damage was noted.

Engine Compartment Inspection:

The engine compartment was intact and mostly undamaged. Minor smoke and soot staining was observed on the underside of the hood. Fire damage was localized to the right side of the engine and contained to the components located immediately forward of the air cleaner housing. This was the only area of fire damage observed within the top of the engine compartment. Additional fire damage was observed from beneath the vehicle.

Undercarriage Inspection:

The undercarriage and suspension was unremarkable and exhibited no obvious fire damage. The underside of the engine compartment exhibited no obvious fire damage. Upon closer inspection, minor thermal damage was exhibited to the starter motor and the small gauge wire connection. This thermal damage was located directly below the fire damage noted during the engine compartment inspection. The involved LLV was mounted on a GM frame and was equipped with a GM fuel filter system.

Fuse Panel Inspection:

The fuse panel was intact with no fire damage noted. All fuses were closed and appeared to be of the correct amperage.

Area of Fire Origin:

Based on the observable fire patterns and the remaining physical evidence, it was determined the fire originated on the right side of the engine compartment immediately forward of the air cleaner housing. This was the single area of fire origin identified.

Contributing Factors:

Based on the remaining physical evidence and available information, the most probable cause of the fire was leaking gasoline originating from the fuel pressure regulator. Upon inspection, the diaphragm within the regulator exhibited two small tears. The leaking gasoline could have been ignited by hot surfaces or arcing occurring within the starter motor or alternator. No evidence of an alternative ignition scenario was identified.

Evidence Collected:

No evidence was collected.

Interviews:

A telephone interview of the carrier was conducted. Ms. reported the following information:

- This was her first time to operate this particular LLV.
- She had been driving the LLV for approximately four hours during her normal route.
- The LLV engine stalled multiple times, each time it was able to re-start.
- The engine stalled a final time and was unable to be re-started after several attempts.
- The LLV was secured, and Ms. walked to the nearby post office.
- While Ms. was gone, an unidentified by-stander observed smoke coming from the hood.
- The bystander extinguished a small fire with a fire extinguisher.
- Ms. arrived back at the vehicle as the fire was being extinguished.
- The Las Cruces Fire Department was called to verify the fire was out.
- The LLV was towed back to the local postal facility.

Service Records:

A review of the provided service records for the involved LLV was conducted. On November 21, 2016, a repair entry was made that involved the fuel pump relay. There were no other recent repairs or service indicated that would have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Nicholas J. Olson

Nicholas J. Olson, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CV

January 19, 2017
RCG File No. 30303476

Photograph 1
Involved LLV 9202731.



Photograph 2
Engine compartment; arrow denotes area of fire origin.



Photograph 3
Area of fire origin.



Photograph 4
Tears observed in fuel pressure regulator diaphragm.



January 19, 2017
RCG File No. 30303476

CV



**NICHOLAS J. OLSON, AAS, IAAI-CFI, NAFI-CFEI
FIRE CONSULTANT**

Mr. Olson is a Certified Fire Investigator (CFI) by the International Association of Arson Investigators and a Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators (NAFI). Additionally, he holds active certifications in Texas as a Fire Investigator, Police Officer, Firefighter, Fire Inspector, and Paramedic. He obtained his Texas Master Peace Officer certificate in 2010 and continues to serve his community as an officer, firefighter, and paramedic. In 2002, Mr. Olson graduated with his Associates Degree in Criminal Justice from Temple College in Temple, TX; however, he continues his pursuit of education through extensive continuing education and professional development training.

Mr. Olson has extensive experience in both the fire service and law enforcement with over 11 years as a full time, public safety professional. As a fire investigator, Mr. Olson's experience includes determining the origin and cause of fires in residential and commercial structures, vehicles, and outdoor land areas; in addition, he was responsible for evidence collection, storage and maintaining chain of custody documentation for all municipal arson cases. Mr. Olson has experience in all facets of investigational procedures and has successful convictions in arson cases. Through his work, he has experience with fire fatality scenes and developed positive working relationships with local, state, and federal authorities.

Mr. Olson continues to serve as an instructor in law enforcement and emergency medical services. He is an adjunct instructor with Temple College in the Criminal Justice department and EMS Professions department.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

IAAI – CFI (Certified Fire Investigator) (Certificate Number 03-030629)
NAFI – CFEI (Certified Fire and Explosion Investigator) (Registration Number 11853-6580)
Temple College - Associates of Applied Science, Criminal Justice - 2002
Texas Master Peace Officer Certificate
Texas Law Enforcement Instructor
Texas Firefighter Certificate
Texas Fire Investigator Certificate
Texas Fire Inspector Certificate
Texas Paramedic Certificate
National Association of Fire Investigators - member
Texas Municipal Police Association - member

EMPLOYMENT HISTORY

2008- Present	Rimkus Consulting Group, Inc.
2005 – 2011	City of Belton, Texas - Firefighter/Paramedic
2001-2004	City of Belton, Texas - Police Officer
2001, 2006-Present	City of Robison, Texas - Police Officer



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
13900 Alton Parkway, Suite 123
Irvine, California 92618
Telephone: (877) 978-2044

July 29, 2019

Re: RCG File No: 100007615
USPS LLV Number: 9204869
VMF Location: 1900 Redlands Boulevard, San Bernardino, California
Subject: Preliminary/Final Report

Dear

On June 24, 2019, a fire occurred involving US Postal Service vehicle LLV 9204869. The loss location was reported to be 29580 Ash Dale Way in Canyon Lake, California. LLV 9204869 was examined at the VMF located at 1900 Redlands Boulevard in San Bernardino, California.

Rimkus Consulting Group, Inc. was retained to examine the 1989 LLV 9204869, VIN 1GGBS10E5K2310953, to determine the cause of the fire. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on July 9, 2019. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver Ms. Nicole McKeon, and documented the vehicle with photographs.

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in undercarriage area.

2. The specific area of fire origin was determined to be adjacent to the transmission where the exhaust pipe crossed below the juncture of the bell housing and the transmission fluid pan.
3. The specific ignition sequence and cause of the fire was determined to be a direct result of a fluid leak, most probably transmission fluid, contacted the engine exhaust pipe, resulting in a hot surface ignition of the transmission fluid.

Observations

Exterior Inspection:

The vehicle sustained no visible exterior fire damage with the exception of an oblong shaped paint discoloration/heat pattern approximately twenty inches wide by six inches high, centered at the rear of the engine compartment hood.

Interior Inspection:

The carrier compartment was intact with no visible evidence of fire entering the carrier compartment.

The rear mail compartment was intact with no visible evidence of fire effects.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L, four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a direct ignition system.

The engine compartment sustained fire effects at the rear section, primarily between the firewall/bulkhead and engine, consistent with observed heat patterns on the engine compartment hood exterior. Low level fire effects were observed to the rear of the engine where plastic components were melted/charred and plastic wire insulation was burned away from conductors.

Fire damage diminished upward and forward within the engine compartment toward the radiator in an orderly fashion. Plastic components were melted and showed heat effects at higher levels. The serpentine belt was intact where near the radiator. The radiator core was intact.

Inspection of fluid levels evidenced engine oil was full and clean, however, transmission fluid was nearly non-existent and charred remnants of fluid were adhered to the transmission dipstick.

Undercarriage Inspection:

No fire damage or effects were visible to the undercarriage at the rear of the LLV. However, heating and fire damage appeared at the transmission where charred and built-up transmission fluid appeared immediately and below an inspection port at the transmission/bell housing junction. Immediately below was the exhaust pipe which displayed charred remnants of fluid patterns on the pipe, below the inspection port.

Fire patterns indicated fire spread upward from this area into the rear of the engine compartment.

The LLV was manufactured in March, 1988, and utilized a GM chassis.

Fuse Panel Inspection:

The fuse panel and all fuses were inspected. All fuses were intact except one 15 amp fuse body was found to be partially melted. This circuit would need to be traced to determine which conductor(s) this fuse serviced.

Area of Fire Origin:

The fire originated at the engine exhaust where the exhaust pipe crossed below the juncture of the bell housing and the transmission fluid pan.

Potential Contributing Factors:

A probable transmission fluid leak, which allowed fluid to contact the engine exhaust pipe. A search of the maintenance records indicated there were complaints of the transmission "slipping" and possibly a low fluid level, however we saw no documentation which would indicate the transmission issue was rectified.

Evidence Collected:

No evidence was collected.

Interview:

The carrier/driver, United States Postal Service, provided the following information:

- Ms. began her route at approximately 11:30 a.m., about five hours prior to the fire.

- It was a very hot day, and the LLV engine died at about 4:20 p.m. while making a U-turn. She waited about five minutes and then restarted the engine and drove to her next delivery.
- She noticed what seemed to be the engine “skipped like the transmission was slipping”. She was going uphill to the next stop.
- When she stopped at the mailbox, it seemed like the engine was overheating because she noticed what looked like steam at the hood near the front window, but then realized it was smoke coming from the engine compartment.
- She turned off the engine then heard crackling. She looked under the LLV and saw flames under the engine area, but not on the street or coming out the hood.
- She called 911 and then two passers-by put the fire out.
- After it was over, she noticed “oil” in the street behind the LLV.

Service Records:

A search of the maintenance records indicated there were complaints of the transmission “slipping” and possibly a low fluid level, however we saw no documentation to indicate the transmission issue was rectified.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A Lowe, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

July 29, 2019
Rimkus File No. 100007615

Photograph 1
Subject LLV 9204869



Photograph 2
Fire entered engine compartment from low level at rear of engine.



Photograph 3

Area of origin: Note fluid stains on exhaust pipe (red arrow) from the transmission.



Photograph 4

Charred fluid build-up at front of transmission.



Curriculum Vitae



David A. Lowe, CFI

Fire Consultant
Fire Division

Background

Mr. Lowe is a Certified Fire Investigator with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services. He is also FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 28 years of experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land.

Investigations and consultations, conservatively estimated at over 2,250, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otay, Mexico and Taber, Alberta, Canada.

Contact Information

(657)-229-9952

dlowe@rimkus.com

13900 Alton Parkway,
Suite 123
Irvine, CA 92618



Rimkus Consulting Group, Inc.
4801 Northwest Loop 410, Suite 700
San Antonio, TX 78229
(866) 202-3747 Telephone
(210) 520-4357 Facsimile
Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2017

April 6, 2017

Re: RCG File No:

LLV Number: 30303574
VMF Location: 9204979
Subject: 10410 Perrin Beitel Road in San Antonio, Texas
Preliminary/Final Report

Dear

On February 7, 2017 a fire occurred in a US Postal Service vehicle in operation along the access road of Loop 410 near Southton Road in San Antonio, Texas. On February 9, 2017 Rimkus Consulting Group, Inc. was retained to examine the 1989 Grumman Allied postal delivery vehicle LLV 9204979, VIN 1GBBS10E10E9K2310972. On February 14, 2017 we conducted a fire origin and cause examination on the vehicle at a VMF location at 10410 Perrin Beitel Road in San Antonio, Texas.

In the course of our work, examined the vehicle, examined maintenance records, documented the fire damage with photographs, interviewed the vehicle maintenance staff, and made multiple attempts to interview the carrier. Our work to complete this assignment was performed by Fire Consultant Bryan L. Skelly, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be on the right side of the throttle body injection where the fuel pressure regulator and steel to rubber fuel line was located below the air cleaner.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of ignition of gasoline vapors by a competent ignition source in the area of the fuel pressure regulator.

Observations

Exterior Inspection:

For the purpose of this report, the left side of the vehicle refers to the mail side and the right side refers to the operator's side. The vehicle exhibited heavy fire damage to the right front portion of the engine compartment consuming all of the aluminum outer covering. The hood for the vehicle was not available for inspection. The front grill assembly was mostly unremarkable with some outer left and right side damage. Most of the paint remained and the headlights and parking light lens covers remained intact. The two front tires exhibited heavy fire damage. Both rear tires were inflated and serviceable. The exterior cargo area of the vehicle was mostly unremarkable with the exception of the area near the operator's cab. Fire patterns were consistent with the fire having originated within the engine compartment and having extended into the passenger compartment.

Interior Inspection:

We observed significant direct fire damage within the passenger compartment. The dashboard, driver seat, and mail carrier tray had been consumed by the fire. The fire extended from the passenger compartment into the cargo area. The rear cargo area was mostly unremarkable. All combustible materials and components associated with the vehicle were consumed within the operator and mail side areas. A small portion of the plastic mail tray remained on the left side of the cab compartment. The roof over the cab compartment exhibited heavy fire damage with metal fatigue/warping of the remaining structure.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine. Severe fire damage was observed throughout the engine compartment. The engine compartment exhibited heavy fire damage on both sides of the engine consuming most of the combustible materials to include rubber hoses, belts, plastic components, and light aluminum components. The right side radiator hose exhibited greater loss of mass than to the left side hose. The greatest observed fire

damage was on the right side of the engine near the center and rear of the compartment near the bulkhead consuming all of the wiring insulation and the front portion of the aluminum fuel pressure regulator located below the air cleaner housing. The engine ignition distributor was not a high energy ignition (HEI) type. Accessible electrical wiring within the engine compartment remained intact with no remaining protective insulation however, no evidence of electrical short circuit was observed. The engine oil was moderately dirty and approximately one quart low.

Undercarriage Inspection:

Examination of the undercarriage revealed severe fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. We observed direct fire damage beneath the left side of the engine compartment. The rubber components of the fuel lines, which extended along the frame on the left side of the vehicle, had been consumed by the fire. The oil pan drain plug and oil filter were both present and did not exhibit evidence of having leaked. The frame of this vehicle was a "C" channel design.

Fuse Panel Inspection:

Examination of the fuse panel revealed severe fire damage to the panel and all of the fuses. Due to the severe fire damage, we were not able to determine if any fuses were blown. All the accessible wiring in and around the dash area remained intact without its protective insulation, although no adverse electrical activity was observed.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated on the right side of the engine, specifically below the air cleaner and involved leaking or atomized gasoline coming from the fuel pressure regulator that was attached to the throttle body. Fire pattern analysis indicates this as being the single area of fire origin.

Contributing Factors:

Based on the remaining physical evidence, the most probable cause of this fire was from either leaking or atomized gasoline fuel coming in contact with either the hot engine or other components in the area of the fuel pressure regulator. The vehicle was in operation at the time of the fire.

Evidence Collected:

No evidence was collected for analysis.

Interviews:

An interview with a mechanic at the VMF provided the following information:

- He identified the fuel system type as being a throttle body injection.
- He identified the component located at the throttle body injection atop the engine as being the fuel pressure regulator.
- He verified that the engine ignition distributor was a regular style and not the HEI type.
- He advised the "C" channel frame as being the original GM type and the closed frame type were aftermarket used as replacements for accident involved vehicles.
- He verified the electric fuel pump is in the tank and keeps pressure on the fuel lines at all times however; some can leak pressure back to the tank.

Service Records:

A review of the obtained maintenance records do not indicate work performed in or around the throttle body or fuel lines. Most all work on the subject vehicle was for preventative maintenance items.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Bryan L. Skelly

Bryan L. Skelly, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CV

April 6, 2017
RCG File No. 30303574

Photograph 1

Front and right side view of the vehicle.



Photograph 2

Front and a portion of the left side view of the vehicle.



April 6, 2017
RCG File No. 30303574

Photograph 3

View showing the driver's compartment.



Photograph 4

View of the rear cargo area of the vehicle.



April 6, 2017
RCG File No. 30303574

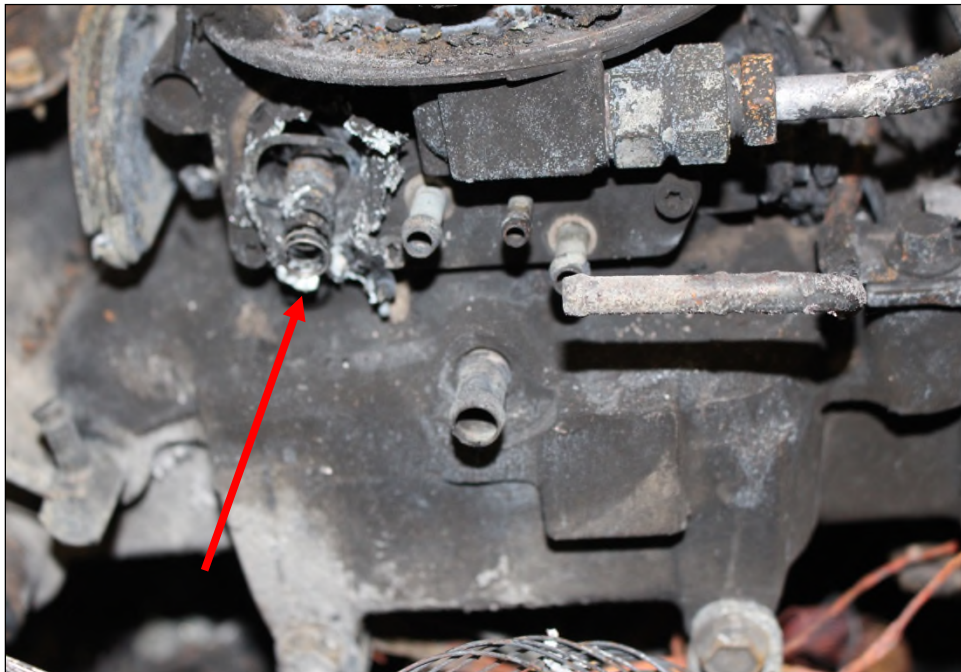
Photograph 5

View showing the right side of the engine compartment.



Photograph 6

View showing the fuel pressure regulator remains.



April 6, 2017
RCG File No. 30303574

CVs



**BRYAN L. SKELLY, IAAI-CFI / NAFI-CFEI, CVFI
SOUTH CENTRAL REGION FIRE MANAGER / HVAC CONSULTANT**

Mr. Skelly has extensive experience in all facets of the fire service with over 25 years of municipal fire service experience. He retired from municipal service as the Deputy Fire Marshal after serving as a shift Firefighter Paramedic and still is a State Licensed Master Peace Officer. Mr. Skelly is a Certified Fire Investigator (CFI) by the International Association of Arson Investigators (IAAI), a Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators (NAFI) and a Certified Vehicle Fire Investigator (CVFI). Mr. Skelly remains active in the law enforcement community and is a local County Deputy Sheriff and was a Police Detective with a suburban city of San Antonio.

Mr. Skelly's experience includes determining the origin and cause of fires in residential, commercial, industrial, as well as vehicular type fires, commercial vehicles, and heavy equipment. Mr. Skelly also has been trained in various facets of hazardous materials operations. Mr. Skelly also performed municipal fire inspections of residential, commercial, and industrial facilities. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blue print plan review skills regarding compliance with fire, life safety regulations, and building code compliance. Mr. Skelly was responsible for review and approval of fire protection system plans including fire sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. Mr. Skelly has served as a municipal Emergency Management Coordinator. Mr. Skelly served as a principle Firefighter Instructor for the San Antonio College Regional Firefighter Academy. Mr. Skelly implemented a non-evasive evidentiary x-ray examination program for the South Texas Region.

Mr. Skelly is a state licensed mechanical contractor and has knowledge of proper installation methods and procedures for residential, institutional, and commercial HVAC equipment. Mr. Skelly has served as a municipal Mechanical Inspector checking for adherence to state and local city codes as they pertained to proper installation methods and procedures.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

IAAI – CFI (Certified Fire Investigator) (Certificate Number 03-132)
NAFI – CFEI (Certified Fire and Explosion Investigator) (Registration Number 7852-3218)
NAFI – CVFI (Certified Vehicle Fire Investigator) (Registration Number 7852-3218v)
International Association of Arson Investigators (IAAI) – Member
National Association of Fire Investigators (NAFI) - Member
Texas Chapter of the IAAI – Member
Texas Chapter of the IAAI – Board of Directors 2006/2008
Texas Chapter of the IAAI – Co-Chair C.F.I. Committee
IAAI – Expert Courtroom Witness Testimony Course 01/06
Texas Fire and Arson Investigators Academy
Texas Master Firefighter Certificate
Texas Master Fire Investigator Certificate



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
Eight Greenway Plaza, Suite 500
Houston, TX 77046
(800) 580-3228 Telephone
(713) 623-4357 Facsimile

Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2016

October 13, 2016

Re: RCG File No: 11010208
LLV Number: 9206132
VMF Location: 5302 Galveston Road in Houston, Texas
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 9206132, VIN 1GBBS10E2K2312093. The examination was performed by Joseph M. Ellington, IAAI-CFI, Regional Fire Division manager on August 9, 2016. This report and case was technically reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

In the course of our work, we examined and documented the fire-damaged vehicle and interviewed the VMF Manager of the USPS Facilities at 5302 Galveston Road in Houston, Texas. We also reviewed USPS correspondence documenting the description of the fire event provided by the driver. Lastly we reviewed the maintenance repair records of work performed by McCormack Fleet Inc., at 9950 Wilcrest Drive in Houston, Texas approximately 90 days before the fire's occurrence.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended by the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the right (mail) side of the involved LLV in the engine compartment.

3. The available physical evidence, in conjunction with the driver's description of events indicates a major internal mechanical failure occurred within the engine that lead to overheating of the engine and resultant fire. Possible reasons for this failure include a thrown rod, blown head gasket, etc. Disassembly of the engine would be needed to conclusively identify the nature and reason for the failure.

Observations

Exterior Inspection:

During the exterior examination of the involved LLV, there was no observable physical evidence that a fire occurred. The exterior paint and surfaces were intact and undamaged.

Interior Inspection:

The interior operator compartment of the LLV was examined and was intact. There was no observable physical evidence on the interior operator and mail area of fire damage.

Engine Compartment Inspection:

Examination of the vehicle's engine compartment revealed fire damage in the form of heat stress to metal components inside the compartment and the melted remains of rubber and synthetic components (hoses, conductor insulation, etc.) concentrated to the right passenger side of the compartment.

Removal of the air filter cover on top of the engine revealed evidence of elevated heat inside the filter assembly and excessive oil. The texture of the oil was frothy and its color creamy indicative of the presence of water. The oil level observed on the dipstick was in excess of normal level and the oils appearance was also frothy and cream colored.

Undercarriage Inspection:

Examination of the underside of the vehicle after it was placed on a lift revealed no evidence the fire originated below the undercarriage and confirmed a higher level of heat stress involving components on the right mail-side of the engine compartment in contrast to the opposite.

Fuse Panel Inspection:

Inspection of the fuse panel was conducted and found intact with no fire damage. Fuses inside the panel were properly sized and exhibited no evidence of an overcurrent condition.

Area of Fire Origin:

Fire damage, fire movement, and intensity patterns indicated the fire originated inside the engine compartment, was confined to it, and did not spread beyond the compartment.

Potential Contributing Factors:

USPS records provided to us for review indicated that prior to the fire's occurrence on July 14, 2016, the vehicle's engine was rebuilt by McCormack Fleet Inc. at 9550 Wilcrest Drive, Houston, Texas. Upon completion of the work performed, the vehicle was delivered back to USPS on April 4, 2016, and placed back in service. A copy of Invoice No. 14094486, dated April 6, 2016 was reviewed.

The available physical evidence, in conjunction with the driver's description of events indicates a major internal mechanical failure occurred within the engine that lead to overheating of the engine and resultant fire. Possible reasons for this failure include a thrown rod, blown head gasket, etc. Disassembly of the engine would be needed to conclusively identify the nature and reason for the failure.

Evidence Collected:

No physical evidence was collected from the fire-damaged vehicle and it was left at the location of its examination at USPS Facilities at 5302 Galveston Road in Houston, Texas.

Interview:

On July 14, 2016, the operator of the vehicle, was driving the vehicle when it made a loud sound and started to jerk. After stopping the vehicle and turning the engine to the "off" position, the driver observed smoke coming from the vehicle and, a short time later, flames coming from beneath it.

This preliminary/final report contains a summary of our findings and does not include a full description of the investigative tasks and methodology we took to reach our conclusions. If a full final report of findings is needed, one will be completed at the request of USPS.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to

determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Joseph M. Ellington

Joseph M. Ellington, IAAI-CFI
Regional Fire Division Manager

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

October 13, 2016
RCG File No. 11010209

Photograph 1

Exterior view of unit from front driver side.



Photograph 2

Exterior view of unit from rear passenger side.



October 13, 2016
RCG File No. 11010209

Photograph 3

View of interior of unit.



Photograph 4

Vehicle identification label in interior of unit.



October 13, 2016
RCG File No. 11010209

Photograph 5

Engine cover raised to examine and document fire damage inside engine compartment.



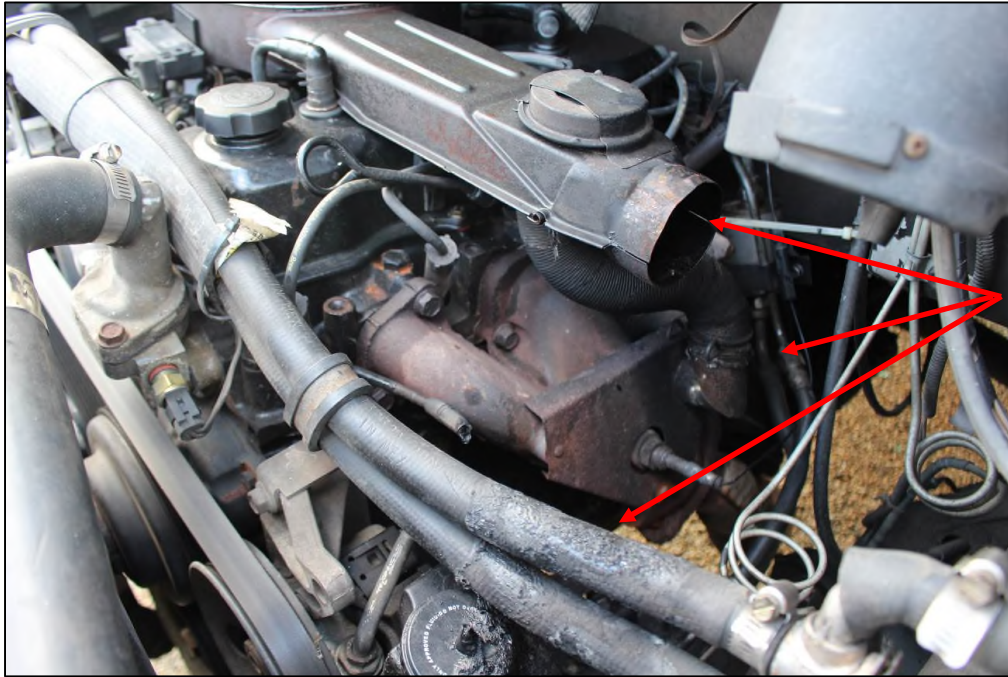
Photograph 6

View of engine compartment.



Photograph 7

Fire damage and heat stress concentrated to passenger side of engine compartment.



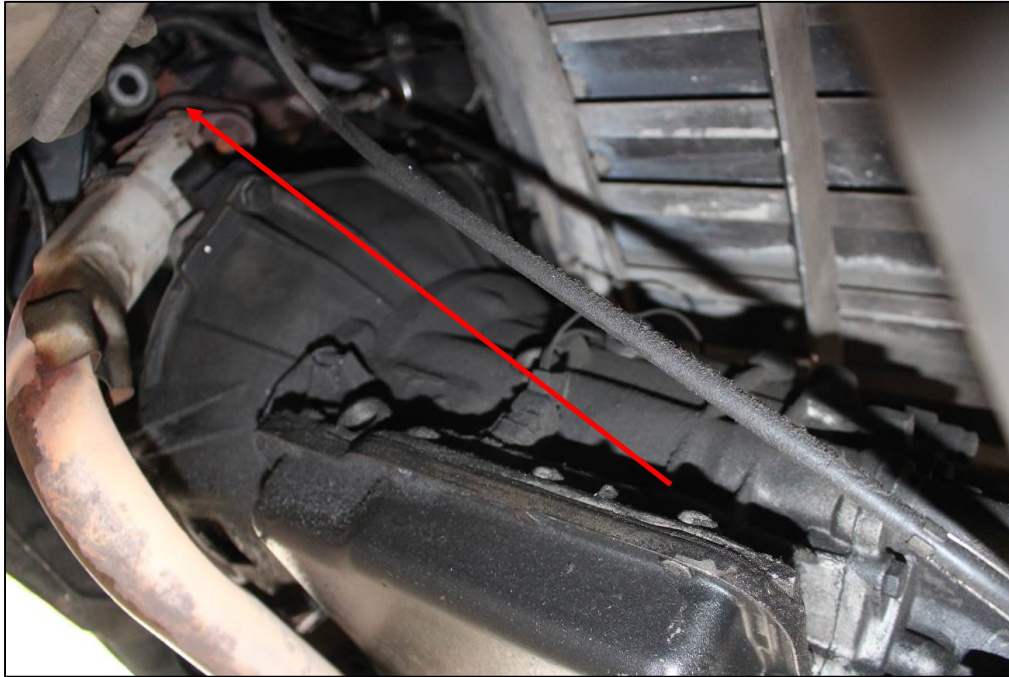
Photograph 8

Air filter access cover removed to show excess oil and heat stress inside the filter assembly.



Photograph 9

View of lower side of engine and exhaust manifold from below vehicle after it was placed on a lift for examination.



Photograph 10

Melted rubber and synthetic material that dripped down on frame below the engine during the brief fire.



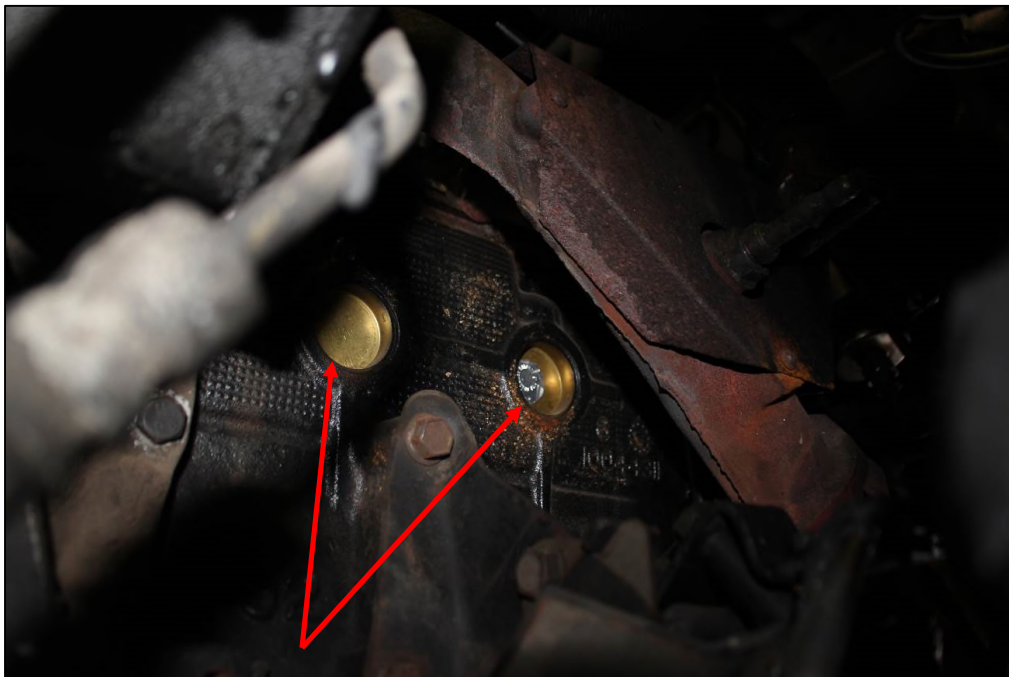
Photograph 11

Closer view of melted remains of rubber and synthetic materials inside engine compartment below engine.



Photograph 12

Engine heat tabs on the affected engine block are designed to monitor engine temperature and determine whether or not an engine has exceeded the recommended temperature margin.



October 13, 2016
RCG File No. 11010208

CVs



**JOSEPH M. ELLINGTON, IAAI-CFI, NAFI-CFEI, CFII, & CVFI
REGIONAL FIRE DIVISION MANAGER**

Mr. Ellington has over 30 years of experience in the field of advanced technical investigations including a combination of field and management assignments in both small and large scale fire and explosion property losses, fire death and injury cases, product defects and liability cases, arson for fraud investigations, vehicle accident investigation and reconstruction, computer forensics, premises safety and security, and training & development solutions. Specific areas of expertise include primary responsibility for the direct management and supervision of cases where the origin, cause and responsibility of fires and explosions are at issue. These assignments involve residential, commercial, industrial, marine, off-shore production platforms, wind turbines, chemical and manufacturing plants and warehouses, heavy equipment, vehicles, product liability and injury/death related fires and explosions.

Consulting expertise includes evaluation of litigation related matters involving the case areas described above as well as explosions involving LPG, Natural gas, and high explosives, fire code and standards compliance, product and label warning evaluations, fire detection and response systems, computer fire modeling and simulation, investigation of fraud related fire incidents, computer forensics involving fire damaged systems, and vehicle accident investigation and reconstruction.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Post Graduate Studies – University of New Haven
Post Graduate Studies – Sam Houston State University
B.S. – Law Enforcement – Sam Houston State University
A.A.S. – Police Science – South Texas Junior College
National Association of Fire Investigators
International Association of Arson Investigators
International Association of Bomb Technicians & Investigators
National Fire Protection Association

EMPLOYMENT HISTORY

2005 – Present	Rimkus Consulting Group, Inc.
2001 – 2005	EFIGlobal, Inc.
1984 – 2000	Texas Investigative Consultants
1983 - 1983	Hicks & Sanchez Fire Investigations
1980 – 1982	Heliflight Systems
1976 – 1980	North Harris College
1971 – 1976	Texas Dept. of Public Safety
1969 – 1971	United States Army



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, NJ 07631
(201) 368-8551 Telephone
(201) 368-8557 Facsimile

Certificate of Authorization No. 24GA28127700

April 14, 2017

Re: RCG File No: 47809256
LLV: 9207274
VFM Location: 308 Thomas Street in Newark, New Jersey
Subject: Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was requested to examine 1989 Grumman LLV 9207274, VIN 1GBBS10EK2313231. The vehicle was examined at the USPS Newark VMF located at 308 Thomas Street in Newark, New Jersey. The fire incident reportedly occurred at the post office in Clifton, New Jersey on March 2, 2017.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on March 13, 2017. Our work to complete this assignment was performed by Fire Consultant Jonathan Sivils, IAAI-CFI. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. An analysis of the observable fire patterns and physical evidence indicated that the specific area of fire origin within the engine compartment was on the driver's side of the engine compartment.

3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the damage and the lack of discernible physical evidence.

Observations

Exterior Inspection:

Examination of the vehicle began at the front and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed to the entire front end of the vehicle. The hood and roof were consumed. All of the window glass in the vehicle was broken. The front tires were burned while the other rear tires remained intact. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Interior Inspection:

Examination of the interior of the vehicle revealed the most severe fire damage had occurred to the front of the vehicle. The dashboard had melted and was consumed. All of the electrical wiring and other components that were housed within the dashboard were severely damaged and the majority could not be examined. The electrical wiring that could be examined did not display any physical evidence of adverse electrical activity.

The most severe fire damage was observed at the bulkhead, dashboard, windshield, and steering column. The burn patterns observed to the interior area progressed upward and outward from the engine compartment. After a review of the progression of the burn patterns, it was determined the fire progressed from the engine compartment into the mail compartment through the manufactured holes in the bulkhead and was due to the failure of the windshield.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L, 4 cylinder gasoline engine. Severe fire damage was observed throughout the engine compartment including mass loss to the belts, hoses, wiring harnesses and multiple components. Fire damage was observed throughout the engine compartment with the most severe damage in the compartment located along the rear of the engine closest to the firewall on the right side. The rubber radiator hoses and other plastic components

along the very front of the engine remained intact. The air filter components were burned but remained intact. More fire damage was noted along the rear portion of the engine on the right side.

The fuel system was examined and revealed it to be the original GM fuel filter system. The fuel lines were routed along the rear of the engine. The filter was intact but all combustible fuel lines were consumed. Due to the severe fire damage and mass loss to the fuel system, a failure to the fuel system could not be eliminated. The battery for the vehicle was located at the front right side of the engine compartment and had sustained severe fire damage. All battery cables remained intact with no signs of adverse electrical activity. The starter was examined and found to be intact on the right side of the engine. The electrical conductors for the starter revealed they were intact and did not reveal any signs of adverse electrical activity. Due to the severe fire damage and mass loss, the electrical wiring and wire harnesses could not be eliminated as a cause of the fire.

The battery for the vehicle was located at the front right side of the engine compartment and had severe fire damage and total mass loss to the entire battery. The battery, the battery terminals, and battery cables were examined and found with severe fire damage and total mass loss. Due to the severe fire damage and mass loss to the battery, battery terminals, and battery cables could not be eliminated as a cause of the fire.

The engine oil, transmission fluid, power steering fluid and brake fluid were examined and observed to be within their normal operating range; however, water and debris did appear to be in the fluids. The carburetor was examined and observed with severe fire damage to the top portion of the carburetor where the air filter housing was mounted. Due to the severe fire damage, the carburetor and a fuel assembly could not be eliminated as a cause of the fire.

The ignition coil, ignition module, and wiring assembly were examined and observed with severe fire damage and total mass loss to the majority of the components. Due to the severe fire damage and total mass loss, the ignition coil, ignition module and wiring assembly could not be eliminated as a cause of the fire.

The main power supply cable from the battery to the starter was examined and observed with severe fire damage and adverse electrical activity at the connection terminals at the battery and at the starter. The cable insulation was observed with total mass loss along the entire length of the circuit. Due to the severe fire damage to the power supply cable, adverse electrical activity on the cable could not be eliminated as a cause of the fire.

An examination of the engine block was conducted. No engine block damage was observed.

An examination of the progression of the burn patterns and severe fire damage was conducted. Based on the fire patterns observed, the right side of the engine within the engine compartment was determined to be the area of origin. However, due to the severe fire damage and total mass loss, the point of fire origin could not be determined.

Undercarriage Inspection:

Examination of the undercarriage revealed severe fire damage to the front end of the vehicle. No fire damage was observed to the rear areas of the undercarriage. Examination of the undercarriage revealed distortion to the light weight metal on the right side the front indicating heat travel from the engine compartment area or front of vehicle. The frame rail components were the original GM. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed severe fire damage and mass loss to the panel and all of the fuses, due to the severe fire damage and mass loss we were not able to determine if any were fuses were blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage, witness statements and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment along the right side. The specific ignition sequence and cause of the fire could not conclusively be determined at this time due to the amount of damage sustained to the vehicle.

Contributing Factors:

The LLV reportedly the carrier was attempting to start the vehicle when he reportedly saw smoke coming from within the engine compartment. The carrier stated the vehicle had no previous problems with the vehicle prior to the fire. The vehicle was parked in the parking lot at the post office when white smoke was observed under the engine hood and quickly turned to black smoke. The carrier observed smoke and looked into the engine compartment through the engine hood seams, the carrier did not attempt to open the hood assembly. The carrier stated he observed fire on the top side of the engine but could not tell where the fire was coming from.

One month prior to the fire, the ignition coil and ignition module were replaced due to a lack of power with the vehicle. The carrier reported that the vehicle was operating properly following the replacement of the parts and no others problems had been

reported prior to the fire. Based on a review of the receipts provided by the VFM, the replacement parts were the standard parts for the vehicle and not high-output units.

This vehicle had numerous ignition coils and modules installed in the preceding two years.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

On March 13, 2017, an interview was conducted via telephone with the Supervisor of Customer Services at the Clifton, NJ Post Office of the vehicle. Mr. reported the following information:

- On the day of the fire at approximately 7:35 A.M., carrier went out to the vehicle to start it up and it would not start.
- He said the carrier came back inside and told him the vehicle would not start and he saw what he thought was smoke from the hood on the driver's side. They went to the vehicle and saw light smoke coming from under the hood. He stated it smelled like antifreeze and thought the vehicle had overheated. They went back inside to call a tow truck.
- Approximately 10 minutes later, another employee came inside and advised them the vehicle was on fire. They immediately called 911.
- No other problems were reported with the vehicle.

Service Records:

A review of the provided service records for the involved LLV was conducted. It was noted that the ignition coil was replaced in January, 2017. There were no other noted recent repairs or service that would appear to have caused or contributed to the cause of the fire. Regular preventive maintenance was noted on the service records.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jonathan K. Sivils

Jonathan K. Sivils, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

April 14, 2017
RCG File No. 47809256

Photograph 1
Front of vehicle.



Photograph 2
Front right side.



April 14, 2017
RCG File No. 47809256

Photograph 3
Right rear side.



Photograph 4
Left rear side.



April 14, 2017
RCG File No. 47809256

Photograph 5
View from front.



Photograph 6
Overall engine compartment.



April 14, 2017
RCG File No. 47809256

Photograph 7
Driver's area.



Photograph 8
Wiring for fuse panel.



April 14, 2017
RCG File No. 47809256

Photograph 9
Remains of battery.



Photograph 10
Air Filter.



April 14, 2017
RCG File No. 47809256

Photograph 11
Inside air filter.



Photograph 12
Under carriage looking towards rear.



April 14, 2017
RCG File No. 47809256

Photograph 13

Under carriage looking towards front.



Photograph 14

Fuel filter on left side on engine.



April 14, 2017
RCG File No. 47809256

Photograph 15
Starter and conductors.



Photograph 16
Fire damage to metal decking on driver's side.



April 14, 2017
RCG File No. 47809256

Photograph 17

Closer view of damage to metal decking on driver's side.



Photograph 18

View from driver's side wheel up into engine compartment.



April 14, 2017
RCG File No. 47809256

CVs



Jonathan Sivils, IAAI-CFI, FIT, CFEI Fire Consultant

Mr. Sivils is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, as well as a Fire Investigation Technician (IAAI-FIT) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI). He also holds an Associate of Science Degree in Fire Protection Technology. In a career spanning more than 25 years in the fire service, he has investigated and determined the origin and cause of more than 800 fires, to include commercial structures, residential structures, vehicles, marine and heavy equipment. He has completed and instructed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Sivils is a court-qualified expert witness in Criminal and Civil proceedings. Mr. Sivils has extensive training in fire and criminal investigations.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

A.A.S Fire Protection Technology – Americus University, Washington D.C. – 2002
Bucks County Fire Chiefs and Firefighters Association
Bucks County Fire Marshal Association
International Association of Arson Investigators
National Association of Fire Investigators
National Fire Protection Association
Pennsylvania Association of Arson Investigators

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
2012 – 2015	Donan Engineering Company, Inc.
2007 – 2012	Bucks county Fire Marshal Office, Bucks County, Pa
2005 – 2007	U.S. Department Of Defense Fire and Emergency Services
2009 – 2010	NEFCO Fire Investigations, Philadelphia, Pa
2003 – 2005	U.S. Department of Homeland Security
1998 – 2003	U.S. Department Of Defense Fire and Emergency Services
1993 – 2010	Penndel Fire Company, Penndel, Pa



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
7501 South Quincy Street, Suite 160
Willowbrook, IL 60527
(866) 746-5871 Telephone
(630) 321-1847 Facsimile

May 9, 2016

Re: RCG File No: 50903654
LLV Number: 9208032
VMF Location: 201 Regas Road in Madison, Wisconsin
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 9208032 that occurred at the corner of Longfellow Court and Forest Park Drive in DeForest, Wisconsin on March 07, 2016. In the course of our work, we examined and documented the fire-damaged vehicle on March 14, 2016. No carrier/operator information was provided and the carrier/operator has not been identified or interviewed at the time of this report.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility at 201 Regas Road in Madison, Wisconsin. The work to complete this assignment was performed by Fire Consultant Lancelot E. Furber, IAAI-CFI/CI. This report was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. After an examination of the involved LLV, the fire was determined to have originated on the right side of the engine compartment.
2. The specific area of fire origin was determined to be in and around the routed fuel lines, fuel filter system, and intake manifold.

3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severe damage in the area of fire origin and the lack of remaining conclusive physical evidence for examination.

Observations

Exterior Inspection:

The exterior examination of the vehicle revealed heat and fire damage to the complete vehicle, with the exception of the lower body, frames, and drive lines. Visible evidence that sections of the aluminum body were cut and removed was noted. These removed sections were not present during our examination.

Interior Inspection:

The interior examination of the vehicle, including the operator's and cargo compartments, was conducted working from the areas of least fire damage to the area of greatest fire damage. Our interior examination revealed extensive fire and heat damage to the operator's compartment of the LLV. Examinations of the burn patterns indicate this interior damage was caused due to fire extension from the engine compartment of the LLV. There was no visible evidence to support that the fire originated within the operator's or cargo compartments of this vehicle.

Engine Compartment Inspection:

Examination of the engine compartment revealed fire/heat damage throughout this area. An examination was conducted working from the areas of least fire damage to the area of greatest fire damage. Based upon heat/fire patterns, the area of greatest fire damage was determined to be at the right side of the engine at the area of the fuel line and intake manifold. The battery cables were examined. There was visible evidence that the positive battery cable, which ran from the battery to the starter motor, arced to the vehicle's motor mount; however, it could not be determined if this occurred prior to or during fire extension. The vehicle's battery had been removed prior to this examination and was not available for examination. Damage to the engine and engine components hindered any and all efforts to properly check engine fluid levels.

Undercarriage Inspection:

Examination of the undercarriage could not be conducted by lifting the vehicle due to the required lifting equipment not being present at this location. The involved LLV had a General Motors frame.

Fuse Panel Inspection:

Examination of the fuse panel, located within the operator's compartment, could not be conducted due to the amount of fire damage within this area.

Area of Fire Origin:

The area of origin was determined to be at the right side of the engine at the area of the fuel line, fuel distribution system, and intake manifold.

The point of fire origin could not be determined within a reasonable degree of certainty due the amount of fire damage within the area of origin.

There was physical evidence of melting of the aluminum intake manifold within the area of origin. Artifacts of the fuel line and fuel distribution system were consumed and/or removed from the area of origin prior to this examination.

Contributing Factors:

Prior to our inspection of the vehicle and possibly prior to the RCG assignment being received, the LLV was removed from the location of the fire in DeForest, Wisconsin and stored at the USPS location in Madison, Wisconsin. The loss location was not examined and the LLV was not examined prior to transport for storage.

The engine of this LLV was removed/replaced prior to this event. The work was completed by Midwest Engine Service, Inc., invoice number 69157, and the date of invoice is March 03, 2016. The invoice stated that broken bolts were removed from the intake manifold which holds electrical wiring. The invoice also reveals that a road test consisting of only five miles was conducted after repairs were completed.

Midwest Engine Service, Inc.
3712 Milwaukee Street
Madison, Wisconsin 53714
608.244.9040

Evidence Collected:

No evidence/artifacts were collected at the time of the RCG examination. The LLV was recovered upon completion of our examination and remains secured at the USPS location in Madison, Wisconsin.

Service Records:

A review of the service records confirms that the engine was removed and replaced by a third party vendor identified as Midwest Engine Services, Inc. on March 3, 2016, prior

to the fire. No other service records were identified that could have been associated with the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Lancelot E. Furber

Lancelot E. Furber, IAAI-CFI/CI, CFEI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Eastern Region Fire Manager

Attachments: Photographs, CVs

May 9, 2016
RCG File No. 50903654

Photograph 1
LLV exterior.



Photograph 2
LLV operator's compartment.



May 9, 2016
RCG File No. 50903654

Photograph 3

Engine, area of greatest fire damage.



Photograph 4

Positive battery cable arc to motor mount.



May 9, 2016
RCG File No. 50903654

CVs



**Lancelot E. Furber, GFireE, IAAI-CFI/CI, NAFI-CFEI
Fire Consultant**

Mr. Furber holds an Associates of Arts and Science Degree, in Fire Science, from Pikes Peak Community College and a Graduate Diploma from the Institution of Fire Engineers/Engineering Council located in London, England in addition to numerous specialized training classes in specific areas. He is a Certified Fire Investigator and Fire Instructor through the International Association of Arson Investigators, a Certified Fire and Explosion Investigator through the National Association of Fire Investigators, and is a Certified Firefighter, Certified Fire Officer and Certified Hazardous Material Operations/Technician. Mr. Furber holds certificates from Lehigh County Technical College in Automotive Technology and Residential Electrical Construction. Mr. Furber has testified as an expert witness in arbitration hearings as well as State criminal and civil courts.

Mr. Furber has an extensive background in Fire Investigation, Fire Suppression, and Vehicle Extrication. Mr. Furber is a board member of the National Fire Protection Association (NFPA) Fire Science & Technology Educators Section and the NFPA Fire Service Section. His professional experience includes computer fire modeling, forensic photography, forensic evidence collection, fire and explosion investigation, ignition scenarios and fire travel experimentation, and full scale live fire testing.

Education and Professional Associations

Associates of Arts and Science (Fire Science) – Pikes Peak Community College

Graduate Diploma – Institution of Fire Engineers/Engineering Council

Certified Fire Investigator – International Association of Arson Investigators

Certified Fire Instructor – International Association of Arson Investigators

Certified Fire and Explosion Investigator – National Association of Fire Investigators

Certified Firefighter II – PRO Board/NBFSPQ

Certified Fire Officer II – PRO Board/NBFSPQ

Certified Haz-Mat Operations/Technician – PRO Board/NBFSPQ

Certified Emergency Medical Technician

Member of: International Association of Arson Investigators; International Association of Identification; National Association of Fire Investigators; National Fire Protection Association; National Association of Subrogation Professionals; National Fire Academy Alumni Association; Professional Fire & Fraud Investigators Association; Motorsports Professional Group
Motorsports Safety Group



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
6374 NW 97th Avenue
Doral, Florida 33178
Telephone: (786) 920-0935
Certificate of Authorization No. 8301

November 21, 2019

Re: RCG File No: 100017163
LLV Number: 9210245
VMF Location: 2250 Northwest 72 Avenue Miami, Florida
Subject: Preliminary/Final Report

On October 3, 2019, a fire involving USPS LLV 9210245 reportedly occurred after a mail delivery at 16731 Northwest 72 Avenue in Miami Gardens, Florida. The vehicle was manufactured by General Motors and Grumman in 1989 and was a Grumman model LLV-93 RH with VIN 1GBCS1046R2901427.

Rimkus Consulting Group, Inc. was retained to examine the LLV at the Miami VMF located at 2250 Northwest 72 Avenue in Miami, Florida. In the course of our work, we inspected, photographed and reviewed the vehicle repair and maintenance orders on October 28, 2019. The vehicle examination was conducted by Fire Consultant Robert Hernandez, IAAI-CFI. A technical review of the report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The vehicle sustained moderate to severe fire damage to the engine and interior compartment from a fire originating within the interior compartment.

2. The area of origin was determined to have been from the middle to the left, mail side of the interior compartment, along the bulkhead/dashboard adjacent to various electrical conductors, the engine control module (ECM) and the heater blower motor.
3. The specific ignition sequence and cause of the fire was inconclusive due to the severity of damage in the area of origin, however the possibility that adverse electrical activity occurred to one of the conductors or switches connecting to the heater blower motor or other components in the area of origin could not be eliminated.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The front grill, lights and quarter panels of the LLV were observed to be intact with no fire damage. The hood was observed with a radial burn pattern towards the rear mail side of the compartment indicating severe fire in the area near the bulkhead between the compartments. The windshield and roof above the operator's compartment were observed to be completely burned through. Both doors were observed with minor to moderate smoke and soot damage. The fire damage diminished toward the rear of the vehicle with the exception of minor smoke and soot damage observed near the top of the rear overhead door.

Interior Inspection:

The rear interior of the cargo compartment was observed with severe, smoke and soot damage and minor fire damage near the opening to the interior compartment where fire patterns indicated the fire had originated.

The entire interior compartment was observed with severe fire damage. The front windshield and roof constructed with lightweight aluminum had completely burned through and were consumed by the fire. Fire patterns indicated the fire originated below the dashboard towards the middle of the compartment and extending towards the mail side. The driver's side was observed with severe fire damage to the dashboard.

Various bundled electrical conductors extending along the underside of the dashboard on the driver's side were observed with the insulation melted but no evidence of adverse electrical activity. The aluminum bulkhead to the engine compartment was still intact on the driver's side and had not melted through as in the center and mail side of the compartment.

Engine Compartment Inspection:

The engine compartment was observed with moderate to severe fire damage with the most severe fire damage observed at the rear, middle of the compartment along the bulkhead to the interior compartment.

The drivers, right side of the engine compartment containing the battery, brake booster, brake master cylinder, alternator and various hoses connecting to the engine were observed with melting of the plastic engine cover and hoses. Fire patterns indicated the fire did not originate towards the driver right side of the engine compartment. The fuel lines that extended along the back of the engine were observed to be intact with no evidence that the fire originated at that top of the engine or rear of the engine from the fuel lines.

The mail side of the engine compartment was observed with severe damage towards the rear and the aluminum bulkhead to the operator's compartment had burned through at this point. However, the fuel lines including the rear fuel line that extended from the fuel tank along the rear underside of the vehicle into the mail side of the engine compartment before extending toward the rear and driver side of the compartment were examined and found to be intact. Most of the combustible materials including hoses and plastic materials were still intact in this area. No evidence was observed to indicate that a fuel leak and a hot surface ignition on the exhaust manifold was the cause of the fire.

The vehicle was equipped with a 2.2 liter gasoline engine with a high output ignition coil.

Undercarriage Inspection:

Moderate fire damage was observed below the rear of the engine compartment and under the dashboard area due to drop down of flaming materials from above. The rear underside of the vehicle below the engine compartment including all four tires, brakes and bearings were observed to be intact with no evidence of fire damage.

Fuse Panel Inspection:

The fuse panel was positioned under the far right side of the dashboard near the side panel. The outer plastic cover had melted but was still observed surrounding the fuses indicating the fire did not originate at this location.

Area of Fire Origin:

Several electrical conductors extending from the fuse panel below the dashboard on the driver's side towards the mail side of the operator's compartment were closely examined and no evidence of adverse electrical activity was observed. The ECM, positioned towards the center of the dashboard was observed with severe fire damage

however the printed circuit board was intact and no evidence of adverse electrical activity was observed to the connecting conductors.

The most severe damage was towards the middle, left side of the operator's compartment where the heater coil and the heater blower motor were positioned. The heater coil, positioned closer to the side panel and inside a casing that extended through the bulkhead was observed to be mostly intact. The heater blower motor, positioned on the operator's side of the bulkhead was observed with severe melting and fire damage.

A large area of fire debris observed on the floor between the ECM and heater blower motor was examined closely. Various electrical conductors were found with severe fire damage, however no evidence of adverse electrical activity was found at any of the connections. Fire patterns indicated the fire originated in this area. With the information available at this time the possibility that adverse electrical activity occurred to one of the conductors or switches connecting to the heater blower motor or other components in the area of origin could not be eliminated as a potential cause of the fire.

Potential Contributing Factors:

Service records indicated the vehicle had various electrical issues throughout the last year including having the battery replaced three times among other electrical repairs indicating a recurring electrical problem that had not been repaired.

The normal practice of shutting off and restarting the vehicle after each mail delivery could put a severe strain over time on the vehicle electrical system.

Evidence Collected:

No evidence was collected as the remaining condition of the components within the area of fire origin would unlikely reveal any relevant data from testing the remnants.

Operator's Statement

After several attempts to contact the operator, a phone interview was finally conducted on November 20, 2019, with the operator of LLV 9210245 provided the following information:

- She stated she is not the normal driver of LLV 9210245 and this was only the second time she had driven the vehicle.
- She stated she had first driven the vehicle the day before and the vehicle had started up fine and was running normally.

- She said that early in her deliveries that first day, she shut off the vehicle to walk up to a mailbox to deliver the mail and the vehicle would not start when she returned.
- She was told the vehicle had very recently had the battery replaced (service records indicated that was four days earlier).
- She stated they are trained to shut the vehicle off every time they walk away from the vehicle to deliver the mail.
- Her supervisor came out and jumpstarted the vehicle and it ran fine, including starting up the rest of the day.
- The next day, October 3, 2019, she picked up the vehicle and started her mail route at approximately 10:00 A.M.
- The vehicle started fine and was running normally. She did not see, smell or hear anything unusual throughout the day.
- At approximately 4:35 P.M., she shut off the vehicle to deliver the mail to 16801 NW 72nd Ave in Miami Gardens when she noticed smoke as she was walking back towards the LLV.
- She stated the smoke was coming from the left side of the vehicle towards the rear of the engine compartment and below the dashboard.
- She called her supervisor to let him know that she saw smoke on the vehicle from under the hood and he told her to call 911.
- As she waited for the fire department to arrive, more smoke began to come out from under the hood towards the windshield and also from the bottom of the LLV corresponding with the position of the dashboard/bulkhead.
- Before the fire department arrived, the vehicle was up in flames, mostly towards the middle of the vehicle below the windshield.

Service Records

A review of service records going back one year was performed revealing various electrical issues including replacing the battery three times.

- September 30, 2019 - unscheduled service included repairing a fuel injector replacing the water pump radiator alternator and battery. It also showed they were planning on replacing the engine.

- July 2, 2019 - unscheduled maintenance included replacing the battery, miscellaneous electrical repairs, starter circuit and replacing the fuel relay.
- May 15, 2019 - the last Preventative maintenance Inspection was conducted included replacing the turn signal flasher relay.
- February 27, 2019 - unscheduled maintenance included replacing the heater blower motor,
- February 8, 2019 - unscheduled maintenance included replacing the ECM, replaced the battery, fuel injector, alternator and radiator.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Robert Hernandez

Robert Hernandez, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

November 21, 2019
Rimkus File No. 100017163

Photograph 1

View of the front, driver's side of LLV 9210245. Note the radial fire pattern on the hood and that the fire patterns are extending from the rear of the engine compartment and interior dashboard.



Photograph 2

View of the mail side of the LLV. Note the windshield and roof above the operator's compartment were consumed by the fire.



Photograph 3

View of the cargo compartment.



Photograph 4

View from above showing the burn through hole directly above the dashboard indicating the area of origin.



Photograph 5

View of the engine compartment. Note that most of the components are intact and the majority of the damage is at the rear of the engine.



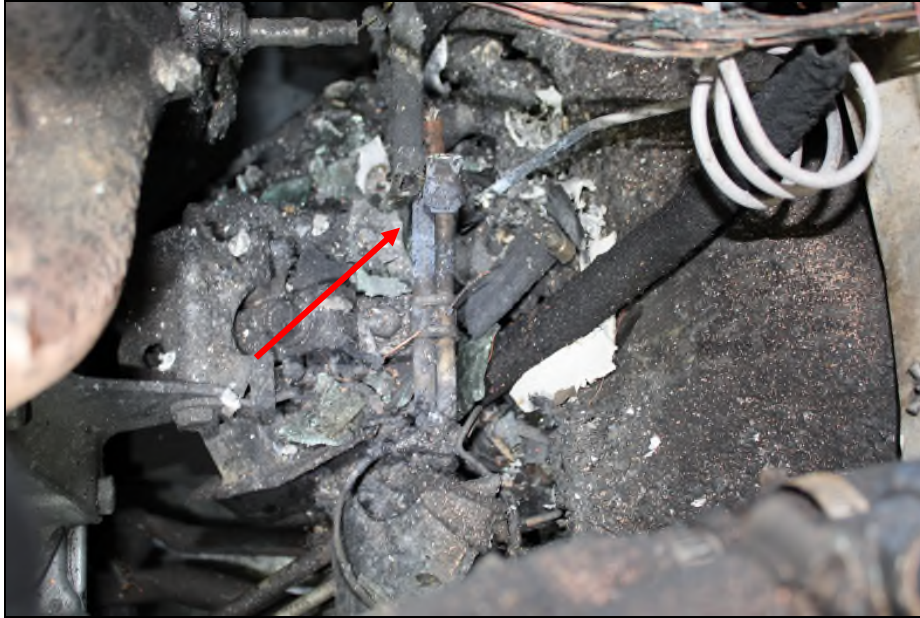
Photograph 6

Closer view of the area with the most severe fire damage in the engine compartment. Note that although evidence of oil is observed, the rubber hoses are mostly intact indicating the fire extended to this area from the operator's compartment.



Photograph 7

Closer view of the fuel lines at the rear of the engine. Note that although they came apart, they are mostly intact with no evidence of severe fire damage observed.



Photograph 8

View of the driver's side of the operator's compartment. Note the aluminum bulkhead is still intact on this side and is melted through towards the center of the vehicle.



Photograph 9

View of the underside of the dashboard on the driver's side. Note the fuse panel is severely melted but still has combustible material remaining.



Photograph 10

Another view of the mail side of the operator's compartment. Note the bulkhead melted and was burned through to the engine compartment. Note the position of the dashboard had occupied with various electrical conductors inside.



Photograph 11

Closer view of the area of origin showing the severe fire damage in the area. Note the fire damage is less severe in the engine compartment.



Photograph 12

View of the severe fire damaged ECM and connecting electrical conductors. The ECM was positioned below the dashboard in the area of origin.



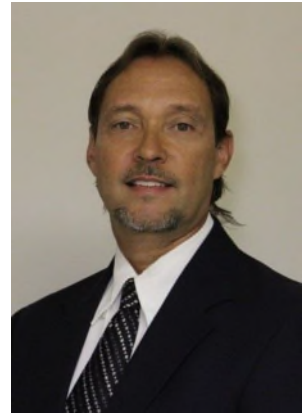
Photograph 13

View of the remnants of the heater blower motor.



November 21, 2019
Rimkus File No. 100017163

Curriculum Vitae



Robert Hernandez, CFI, CFEI

Fire Consultant
Fire Division

Background

Mr. Hernandez holds a A.S. degree in Fire Science. He is also a Certified Fire Investigator with the International Association of Arson Investigators (IAAI-CFI) and a Certified Fire and Explosion Investigator with the National Association of Fire Investigators (NAFI-CFEI) as well as a licensed Fire Investigator, Licensed Fire Inspector and Licensed Private Investigator in Florida.

He is a member of Florida Task Force 2 (FLTF2) and has extensive experience in Urban Search and Rescue including structural collapse, confined space and vehicle machinery extrication.

He served the City of Miami for 34 years as a firefighter, paramedic and investigator and with the City of Miami's Technical Rescue Team. As a member of the Fire Investigation Unit, Mr. Hernandez investigated and determined the origin and cause involving commercial structures, residential structures, vessels and vehicles. He collaborated with multiple agencies including the State Fire Marshal, Alcohol, Tobacco and Firearms (ATF), local police, insurance companies and legal agencies during large loss incidents.

Contact Information

(954) 428-1422

rhernandez@rimkus.com

5201 Blue Lagoon Drive,
Suites 846 and 851
Miami, FL 33126



Rimkus Consulting Group, Inc.
13900 Alton Pkwy., Suite 123
Irvine, CA 92618
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

September 26, 2017

Re: RCG File No:

	71806200
LLV Number:	9210626
VMF Location:	1900 W. Redlands Boulevard San Bernardino, California
Subject:	Preliminary/Final Report

Dear

On August 8, 2017, a fire occurred involving a USPS LLV 9210626. The loss location was reported as 16975 San Bernardino Avenue in Fontana, California. LLV 92106261 was examined at the VMF located at 1900 West Redlands Boulevard in San Bernardino, California.

Rimkus Consulting Group, Inc. was retained to examine LLV 9210626, VIN 1GBBS10E4K2316548, to determine the cause of the fire. In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on August 22, 2017. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver Mr. Steve Fierro, and documented the vehicle with photographs. This report and case was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator's compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the turn signal switch positioned on the steering column.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the upper steering column bearing located at the turn signal switch within the steering column which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side.

The rear cargo area, both side doors and all four tires were intact. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Examination of the exterior of the vehicle revealed no fire damage.

Interior Inspection:

There was no evidence of fire effects in the LLV interior except within the steering column, which had been partially disassembled prior to our examination.

Evidence of heat damage was observed at the plastic turn signal assembly located at the upper portion of the steering column, immediately below the steering wheel. The turn signal assembly was observed with localized fire damage primarily on the lower right side of the assembly, directly beneath the horn grounding button location.

Melting was also observed to the plastic horn grounding ring assembly, which was removed prior to our examination, and found on the carrier service tray, immediately left of the driver seat.

Engine Compartment Inspection:

The engine compartment was examined. No fire or heat damage was observed. The fuel filter was intact and located along the rear of the engine near the mail side of the transmission. The fuel system was examined and found to be intact and observed with no fire damage. The fuel filter was observed with no fire damage. The fuel system was the GM model. The battery for the vehicle was located at the front right side of the engine compartment and had no fire damage. The engine oil and transmission fluid were examined and observed to be within their normal operating range.

An examination of the engine block was conducted. No fire damage was observed to the engine block. No internal failures of the engine were observed.

Undercarriage Inspection:

Examination of the undercarriage revealed no damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact.

Fuse Panel Inspection:

Examination of the fuse panel and fuses revealed no fire damage, and no fuses had been tripped or blown.

Area of Fire Origin:

Examination of the area of origin, located within the steering column at the turn signal assembly, revealed a small area of fire damage to the switch.

Contributing Factors:

Potential contributing factors to the cause of the fire was normal wear and degradation of components.

Evidence of accumulated metal particles, which appeared to be of brass, were observed inside and around the upper steering column bearing and turn signal assembly. These metal particles resembled those produced by using a file to smooth or form metal. Observations indicated the upper steering column bearing at the turn signal assembly and metal horn button, which was held in contact to the horn grounding ring assembly with spring pressure, appeared to have filing marks and brass shavings from the upper steering column bearing. In addition, the metal portion of the horn grounding ring may have also produce metal particulates due to the friction contact with the horn grounding button.

A molten nugget of this metal particulate was found in the turn signal assembly, and may have provided a high resistance path for an electrical short or ground fault. Examination and evaluation by an electrical engineer is recommended.

Evidence Collected:

The turn signal assembly, horn grounding ring assembly, and molten metal particulate nugget were collected and sent to Charlotte office for examination by a P.E.

Interview:

Mr. Carrier for USPS, provided the following information:

- He had been a carrier for the USPS for eleven years.
- The fire happened at about 9:30 A.M. or 10:00 A.M.
- The LLV was running "fine with no problems" the morning of the fire.
- He had driven the LLV for only about 2 miles when he used the turn signal to make a left turn and then light smoke appeared at the steering column.
- He never saw any fire, only smoke.
- He believed the turn signal had recently been worked on, but was still not working correctly. The turn lever would not return to its center position automatically after completing a turn.

Lab Exam:

A lab examination of the ignition switch was conducted by Forensic Consultant Mark H. Nelson, P.E. on September 1, 2017. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the upper steering column bearing located at the turn signal switch within the steering column which heated and ignited surrounding combustible material.

Service Records:

A review of the provided service records for the involved LLV was conducted. The last scheduled service was completed on June 11, 2017. After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. However, based on this information, maintenance performed on the vehicle may not have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

September 26, 2017
RCG File No. 71806200

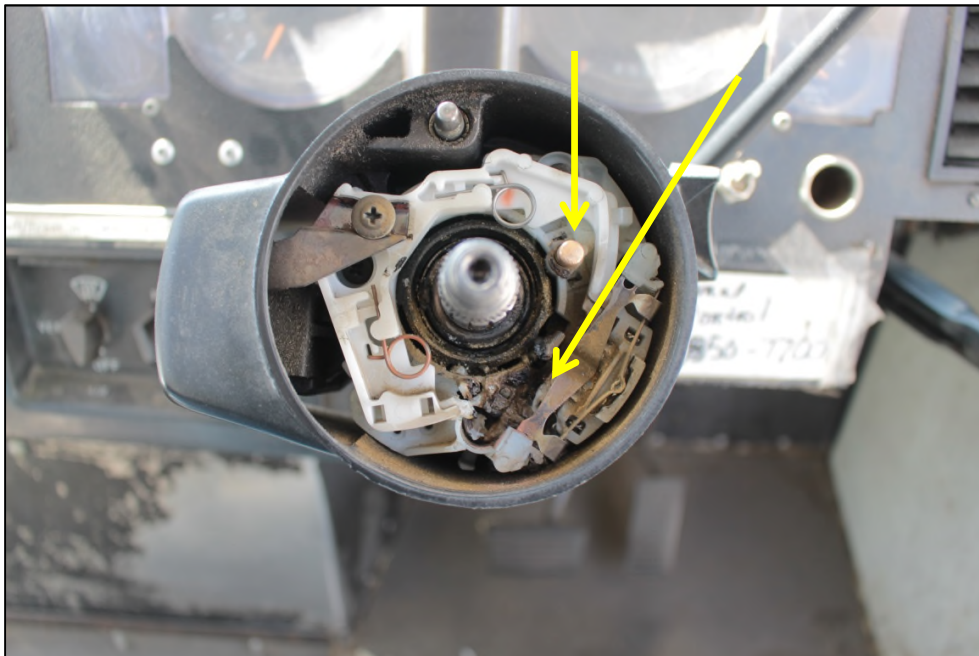
Photograph 1

LLV 9210626, front and left side.



Photograph 2

Steering column and turn signal assembly. Horn button and origin, yellow arrows.



Photograph 3

Origin at turn signal assembly.



Photograph 4

Molten metal particulate nugget from the turn signal assembly.



September 26, 2017
RCG File No. 71806200

Photograph 5
Undercarriage.



Photograph 6
Operator's compartment and steering column area.



September 26, 2017
RCG File No. 71806200

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1881 Worcester Rd.
Suite 203
Framingham, MA 01701
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

June 15, 2016

Re: RCG File No: 44802702
LLV Number: 9213576
VMF Location: 212 Fenn Street in Pittsfield, Massachusetts
Subject: Final Report

On March 30, 2016, a fire occurred involving LLV 9213576, VIN 1GBCS10E7L2301970 owned and operated by the USPS. The vehicle was located and inspected at the USPS Vehicle Maintenance Facility at 212 Fenn Street in Pittsfield, Massachusetts. Rimkus Consulting Group, Inc. was retained to determine the origin and cause of the fire. Our inspection of the vehicle occurred on April 8, 2016.

In the course of our work, we inspected and photographed the vehicle and reviewed the work order history. Our work to complete this assignment was conducted by Scott S. Popovich, CFEI, Fire Consultant. This report and case was technically review by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended by the current edition of National Fire Protection Association's N.F.P.A. 921 – "Guide for Fire and Explosion Investigations".

Conclusions

1. The involved LLV sustained moderate fire damage.
2. The fire was determined to have originated in the engine compartment at and around the electrical connection to the alternator.

3. The specific ignition sequence and cause of the fire was an adverse electrical event involving the electrical wiring for the alternator.
4. Testing of the alternator and electrical connections by an electrical engineer is recommended and may reveal the reason for the failure.

Observations

Exterior Inspection:

The examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left refers to the passenger side. The hood of the vehicle was unevenly open indicating that it had been pried up on the driver's side. Two small areas of discoloration due to heat from the engine compartment were observed on the engine hood. One was on the driver's side front corner and the other was in the middle of the hood towards the windshield side. Small areas of smoke staining were observed on the edges of the engine hood. No other areas of fire damage were observed on the exterior of the vehicle.

Interior Inspection:

The interior was inspected. The inspection began at the rear of the vehicle in the cargo compartment. No fire damage was observed on the interior of the vehicle.

Engine Compartment Inspection:

The engine compartment was examined from above. The engine coolant reservoir was consumed by the fire. The insulation on the headlight wiring in the area of the reservoir was found melted. The rear of the alternator had evidence of melted wiring attached to the casing. The EGR cell, TPS (throttle position sensor), Manifold air temperature sensor and Manifold air pressure sensor were all damaged by flame impingement. The air cleaner was removed and inspected. The damage found on the air cleaner was consistent with heat traveling from the direction of the alternator. No other major damage was observed in the engine compartment.

Undercarriage Inspection:

The under carriage was examined. The frame rail components were undamaged. The associated fuel lines were intact and free of damage. The undercarriage was eliminated as the origin of the fire. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

Examination of the fuse panel located within the operator's compartment revealed no evidence of soot, smoke, heat or fire damage. The fuse panel did not have a cover. The fuses were examined and no blown fuses were observed.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence and an eye witness that the fire originated in the engine compartment. The specific area of origin was the wiring and sensors around the alternator.

Potential Contributing Factors:

A potential contributing factor to the ignition of the fire was the alternator and associated wiring. It is recommended that further testing on the components of the vehicle be completed by an engineer.

Evidence Collected:

Three items of interest were collected as physical evidence. The evidence was shipped to the Charlotte office of Rimkus Consulting Group, Inc. to be analyzed in the laboratory by Jack R. Kennedy, III, IAAI-CFI to confirm the scene findings and possible failure point.

Exhibit A - alternator

Exhibit B - wiring near the alternator

Exhibit C - wiring from the light circuit

Testing can be completed on the collected alternator and associated wiring by an electrical engineer. An unburned exemplar alternator would also be required to attempt to determine the cause of the failure.

Service Records:

The service records were reviewed on site by the field investigator. There was no indication that service had been conducted that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Scott S. Popovich

Scott S. Popovich, CFEI, CFPS
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Eastern Region Fire Manager

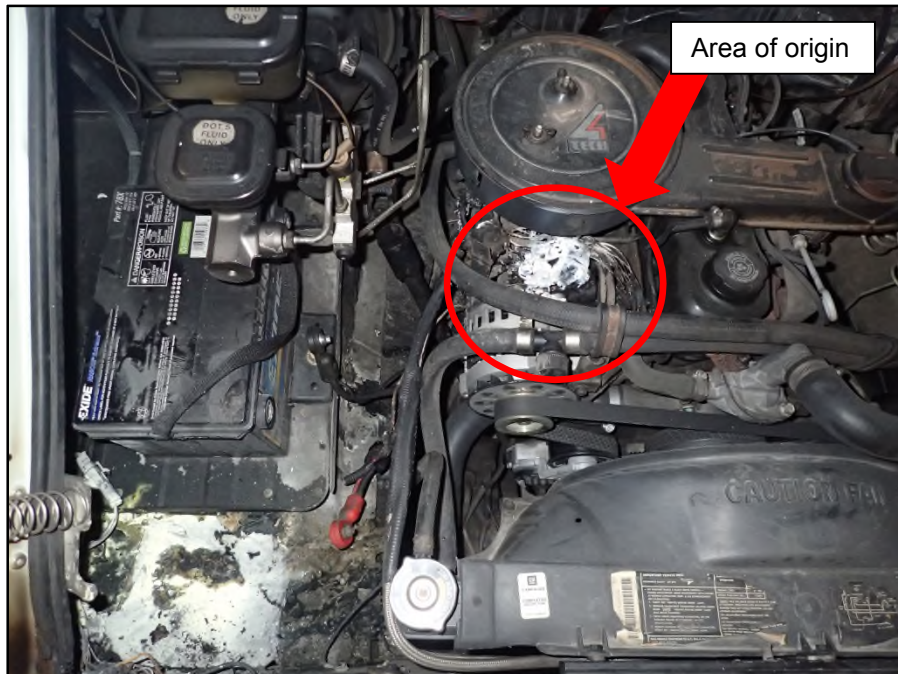
Attachments: Photographs, Fire Report, CVs

June 15, 2016
RCG File No. 44802702

Photograph 1
Front of LLV 9213576.



Photograph 2
Engine compartment.

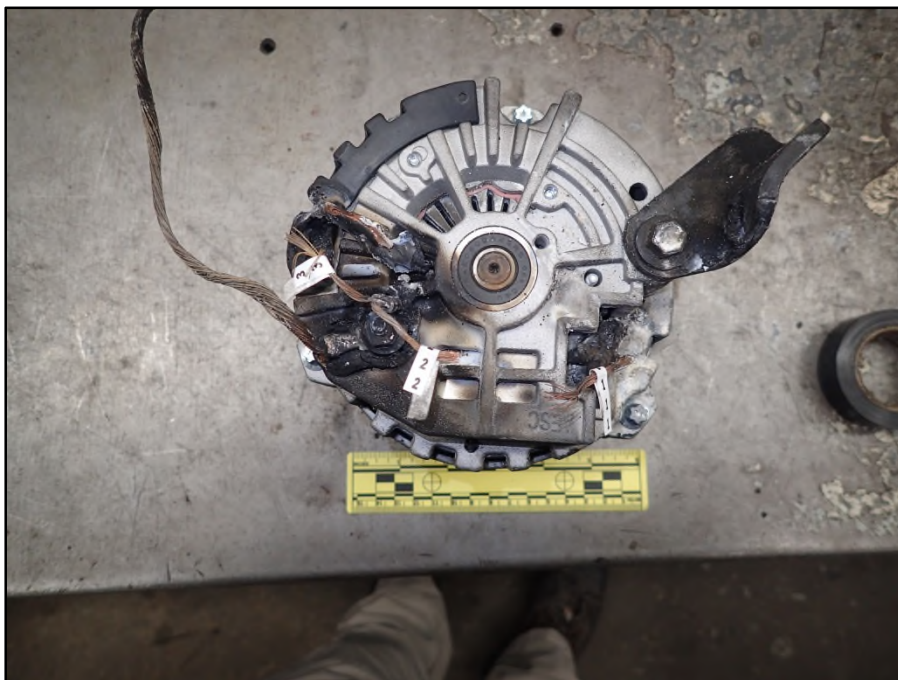


June 15, 2016
RCG File No. 44802702

Photograph 3
Damaged sensor.



Photograph 4
Damaged alternator.



June 15, 2016
RCG File No. 44802702

Fire Report



Pittsfield Fire Department
Incident Report

Page: 1
04/08/2016

Incident #: 16-1710-IN Exp. 0

Call #: 16-10290

Location: US POSTAL SERVICE
212 FENN ST
Pittsfield, MA 01201

District: 3-6-1-2-5
Station: Fire Headquarters

Officer In Charge: Noyes, Matthew on 03/31/2016
Report By: Miller, Timothy on 03/31/2016
Approved By: Miller, Timothy on 03/31/2016

4/8/16
D B C

Basic Incident Information

Incident Type: Passenger vehicle fire
Property Use: Parking garage, general vehicle
Actions Taken: Extinguishment by fire service personnel
Investigate

Owner: US POSTAL SERVICE
212 FENN ST
Pittsfield, MA 01201

Property Loss: \$5000
Contents Loss: \$0

Pre-Incident Value: \$5000
Pre-Incident Value: \$0

Resources Used Summary

Alarm: 03/30/2016 @ 2359
Cleared: 03/31/2016 @ 0129

Arrived: 03/31/2016 @ 0004

Shift: B

Alarms: 0

Aid: None

Apparatus
Suppression: 3
EMS: 0
Other: 1

Personnel
Suppression: 8
EMS: 0
Other: 1

Casualties Summary

Deaths
Fire Service: 0
Civilian: 0

Injuries
Fire Service: 0
Civilian: 0

Remarks

Engine 3 responded on a full assignment for a motor vehicle fire in a building, and on arrival found a mail truck inside the building with a small fire in the engine compartment. E3 crew used a dry chemical extinguisher to extinguish the fire. The area of origin appeared to be around the alternator. Fire investigator Cancilla responded and investigated. Postal Supervisor Linda Levante responded to the scene and provided assistance. All companies returned in service.

June 15, 2016
RCG File No. 44802702

CVs



SCOTT S. POPOVICH, CFPS, CFEI, CVFI, FIT FIRE CONSULTANT

Mr. Popovich's professional career includes 25 years with the Woonsocket Fire Department in the city of Woonsocket, RI. In that capacity he has been involved in many different emergency services including Deputy Director of Emergency Management, Assistant Fire Marshal, Lieutenant and Firefighter. As a licensed state of Rhode Island Assistant Deputy State Fire Marshal his duties included: fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

Mr. Popovich has a Master of Science in Fire and Arson Investigation from the University of New Haven with a heavy concentration in forensics and a Bachelor of Science in Public Administration from Roger Williams University. He maintains certifications as a fire investigator and fire inspector and has attended numerous classes at the National Fire Academy and the Rhode Island State Crime Laboratory.

Mr. Popovich was recently recognized for project development for the planning and execution of Emergency Response Training for CVS Corporate Headquarters in Woonsocket, Rhode Island.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

M.S. – Fire and Arson Investigation – University of New Haven, Connecticut
B.S. – Public Administration – Roger Williams University, Rhode Island
A.S. – Fire Science – Community College of Rhode Island

Licenses and Certifications

Fire Investigative Technician (FIT) by the International Association of Arson Investigators
Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators
Certified Vehicle Fire Investigator (CVFI) by the National Association of Fire Investigators
Certified Fire Protection Specialist (CFPS) by the National Fire Protection Association
Certified Fire Inspector (CFI) by the National Fire Protection Association
Certified Evidence Collection Technician (ECT) by the International Association of Arson Investigators
Licensed Emergency Medical Technician by the State of Rhode Island
Licensed Oil Heat Technician
Licensed Hoisting Equipment Operator by the State of Rhode Island
Licensed Private Detective in the State of Rhode Island

Professional Memberships

IAAI (International Association of Arson Investigators)
RIIAAI (Rhode Island Chapter of International Association of Arson Investigators) Board Member



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
13900 Alton Parkway, Suite 123
Irvine, California 92618
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

June 4, 2018

Re: RCG File No: 71806837
USPS LLV Number: 9213619
VMF Location: 1900 W. Redlands Boulevard San Bernardino, California
Subject: Preliminary/Final Report

Dear

On May 4, 2018, a fire occurred involving a USPS LLV 9213619. The loss location was reported to be 79125 Corporate Center Drive in La Quinta, California. LLV 9213619 was examined at the VMF located at 1900 W. Redlands Boulevard in San Bernardino, California.

Rimkus Consulting Group, Inc. was retained to examine 1989 LLV 9213619, VIN 1GBCS10E8L2302075 to determine the cause of the fire. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver and documented the vehicle with photographs. In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on May 21, 2018. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the exhaust system between the header connection to the engine and the transmission oil pan.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of ignition of either leaking or atomized engine/transmission fluid coming in contact with the hot surface area of the components in the area of the exhaust manifold.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. Severe fire damage was observed on the exterior of the LLV. The cover over the cab area of the vehicle had severe fire damage as had the covering for the engine compartment. Severe fire damage was observed to the both the left and right front fenders as well as the top of the LLV. All four tires were intact. The exterior sustained severe fire damage to the front-end and operator's compartment. The cargo area was intact.

Interior Inspection:

The cargo area was intact and sustained moderate smoke damage. The driver's compartment sustained severe fire and heat damage. All of the combustible materials located within this area were consumed by the fire. The fuse block was melted and its components could not be evaluated. The remaining electrical components in the dashboard sustained severe fire damage and could not be identified. The fire damage in the interior of the LLV was consistent with a fire originating in the engine compartment and progressing into the interior.

Engine Compartment Inspection:

Examination of the engine compartment revealed severe fire damage throughout the compartment. The vehicle was equipped with a GM 2.5L, four-cylinder gasoline engine. Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated in the engine compartment. The engine compartment sustained fire, heat and smoke damage throughout. The damage was most severe on the left front area of the engine compartment.

The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been partially consumed. The melted remains of the fuse box from the passenger compartment and the attached wiring harness were inspected. The wiring harness sustained fire and heat damage. The insulation had been consumed. The alternator sustained severe fire and heat damage. The insulation had been consumed from the

conductors to the alternator. The main conductor was secure with no evidence of adverse electrical activity. The auxiliary conductor was secure.

The top of the battery case had sustained severe fire and heat damage. The conductors and terminals had become detached from the battery. The negative conductor was attached to the frame and to the block. The main positive conductor was attached to the starter. The insulation had been consumed but displayed no evidence of adverse electrical activity.

The fuel rail was intact however had sustained severe fire damage. The injectors sustained heat damage but were intact. The fuel lines had sustained severe fire damage however were intact. The power steering unit positioned at the left front of the engine sustained severe fire damage. The flexible return line and reservoir had been consumed. The upper radiator hose sustained severe fire and heat damage. The flexible section of the vapor return line from the fuel tank to the canister mounted in the grill had been consumed. The canister had sustained severe fire and heat damage. The flexible section from the canister to the solenoid at the rear of the throttle body had been consumed. The starter was undamaged by the fire and the conductors were secure. The insulation had been consumed on the conductors routed across the engine from the battery to the starter.

The fuel line was intact from the fuel filter positioned at the bulkhead. The flexible section of fuel line from the left front of the vehicle to the fuel filter had been consumed. The fixed fuel lines at the left front of the engine compartment were in place the flexible lines and vapor line from the front of the frame had sustained severe fire and heat damage. The vapor line to the charcoal canister positioned in the left front corner had been consumed. The charcoal canister sustained fire and heat damage. The fan belt was consumed and the pulley system components were observed with severe fire damage and oxidation.

Burn patterns observed in the engine compartment confirmed the fire originated in the front left area of the engine compartment and progressed upward and outward throughout the engine compartment and into the passenger and cargo compartments.

Undercarriage Inspection:

No fire damage or effects were visible to the undercarriage at the rear and mid-section. However, evidence of fire effects were observed at the exhaust system where adjacent to the transmission. The exhaust pipe evidenced carbonized build-up, which appeared to be from transmission fluid dripping on the pipe. The transmission pan evidenced prior fluid leakage, the remnants being charred from fire heat.

The LLV was manufactured in September 1989, and utilized a General Motors chassis. The vehicle was equipped with a GM fuel filter system. There were no indications observed that the fire originated in the undercarriage of the vehicle.

Fuse Panel Inspection:

The fuse panel was destroyed by fire heat which precluded inspection of the fuses.

Area of Fire Origin:

The area of fire origin was determined to be at the exhaust system location between the header connection to the engine and the transmission location. The exhaust header shield was removed to allow inspection of the header. The header evidenced charred remains of engine oil where the center tandem headers and rear header were coated with black char and the front header evidenced "spotting" of black char, evidencing potential oil leakage at the valve cover gasket. In addition, the exhaust pipe, immediately below, was also partially coated with charred residue, evidencing a potential transmission fluid leak. The exact location of fluid ignition at the exhaust system could not be conclusively determined from physical inspection. However, fire effects observed at the transmission location represents the low-point of fire effects related to the exhaust system.

Potential Contributing Factors:

Over a two to three month period, repeated notifications of smoke in the vehicle by carrier Jose Lopez were not attended to, and a direct request to a USPS mechanic to remedy the issue went unheeded. This information was included in Mr. Lopez' written statement and was also verbally reported to us in our interview.

The apparent contributing factor was deferred maintenance.

Evidence Collected:

No evidence was collected.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records it was determined that a transmission seal leak/smoking issue was noted in December 2017, and apparently addressed/repared in January 2018, and a transmission gasket was re-sealed in February 2018. The transmission was repaired by USA Mobile Auto Repair in September 2017 with only .2 hour repair time, indicating only transmission fluid was added.

Interview:

Carrier stated he has been with the USPS for 12 years, and has been driving the subject LLV for about 2 years. The LLV smoked consistently for two to three months prior to the fire. The smoke and was most noticeable when making curb-side deliveries, at which time the engine was shut off and the LLV was parked for a few minutes. The smoke appeared predominantly at the upper engine hood vents.

The day of the fire, Mr. noticed the smoke was worse than usual when he arrived back at the postal facility at the end of his shift. The LLV would not stop smoking. He immediately reported the issue to his supervisor who went to the LLV and photographed the smoking LLV. The two of them returned inside and approximately 10 to 15 minutes later two other employees came inside and said the LLV was on fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

June 4, 2018
RCG File No. 71806837

Photograph 1

1989 LLV 9213619, VIN 1GBCS10E8L2302075.



Photograph 2

Severe fire damage to the engine compartment and driver's compartment areas.



June 4, 2018
RCG File No. 71806837

Photograph 3
Rear of vehicle.



Photograph 4
Observed most severe damage to mail side of engine compartment.



June 4, 2018
RCG File No. 71806837

Photograph 5
Interior of vehicle.

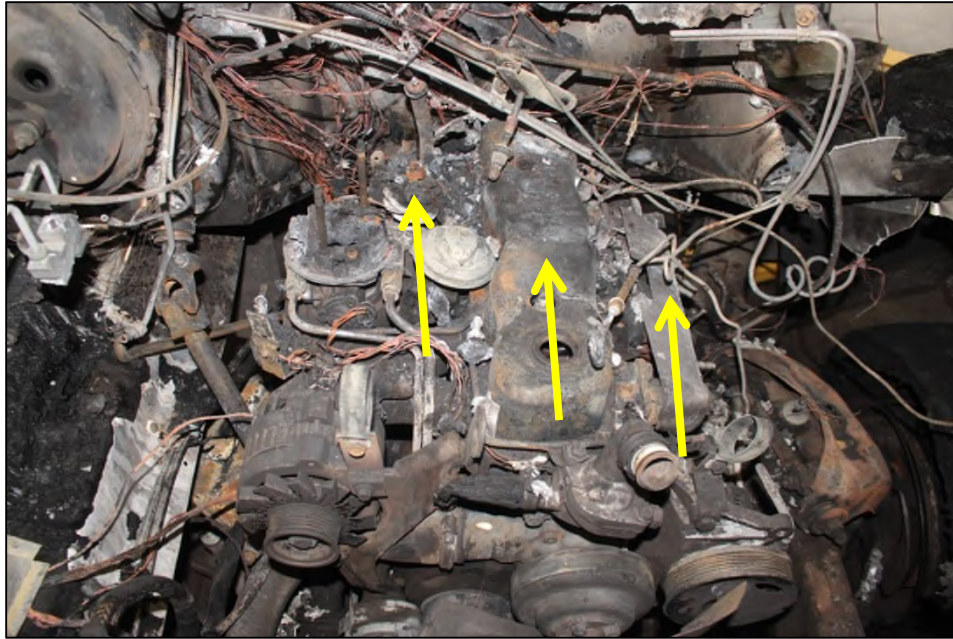


Photograph 6
Engine compartment.



Photograph 7

Most severe fire damage progressing upward and outward from mail side of engine.



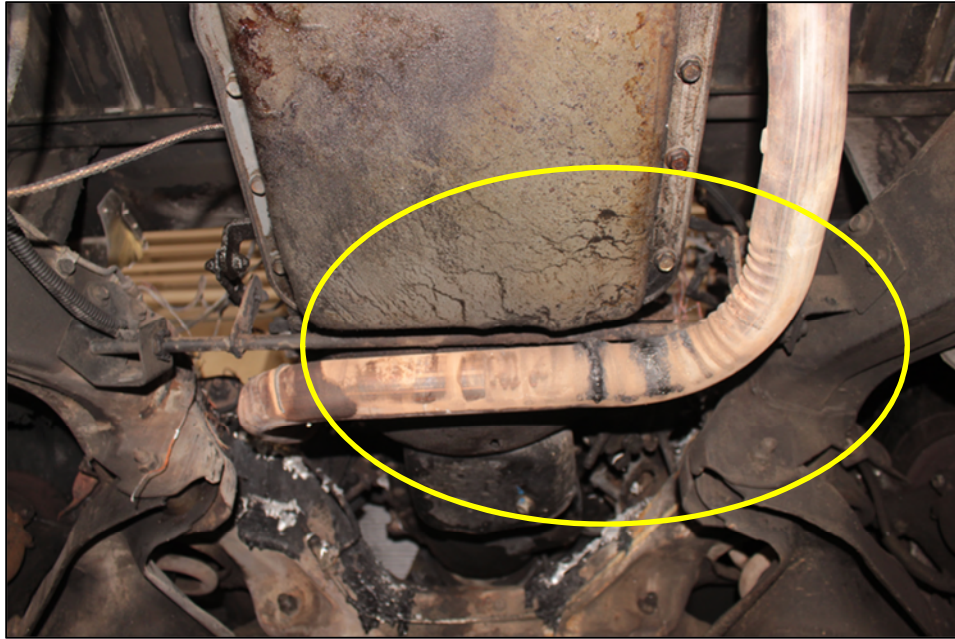
Photograph 8

Underside of the engine and oil pan, observed the fluid residue.



Photograph 9

Underside of engine area, observed the fluid on the exhaust.



Photograph 10

A closer view of the fluid on the exhaust pipe.



June 4, 2018
RCG File No. 71806837

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
13900 Alton Pkwy., Suite 123
Irvine, California 92618
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

November 8, 2017

Re: RCG File No: 71806370
LLV Number: 9213661
VMF Location: 11251 Rancho Carmel Drive San Diego, California
Subject: Preliminary/Final Report

On October 19, 2017, a fire occurred involving USPS LLV 9213661. The loss location was reported as 11251 Rancho Carmel Drive in San Diego, California. LLV 9213661 was examined at the Vehicle Maintenance Facility located at 11251 Rancho Carmel Drive in San Diego, California, on October 20, 2017.

In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on October 20, 2017. During our investigation, we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver, and documented the vehicle with photographs. Rimkus Consulting Group, Inc. was retained to examine LLV 9213661, VIN 1GBCS10E1L2302015, to determine the cause of the fire. This report was technically reviewed by Technical Fire Manager David Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.

2. The specific area of fire origin was determined to be on the top side of the engine towards the carburetor and air filter.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of ignition of either leaking or atomized engine fluid coming in contact with a competent ignition source within the engine compartment.

Observations

Exterior Inspection:

There were no visible fire effects to the exterior of the vehicle.

Interior Inspection:

There were no visible fire effects to the interior of the vehicle.

Engine Compartment Inspection:

The engine compartment was intact except at the carburetor/air filter location and adjacent foam sound-deadening material in the firewall recess above and behind the engine.

Removal and examination of the air cleaner canister evidenced internal fire heat effects where the air filter element was partially charred and the bottom rubber seal was melted and adhered to the bottom of the metal canister. This indicated high heat at the bottom of the canister from below the air filter canister.

Plastic harness connectors near and in contact with the front facing portion of the air filter canister were charred and sustained mass loss due to fire consumption. This observation was consistent with flaming fire external of the air filter canister. Electrical conductors at this location evidenced mass loss of plastic wire insulation from fire consumption, leaving stranded copper conductors exposed. No evidence of adverse electrical activity or arcing was observed.

Observations indicated the source of a gasoline fuel leak was external to, and immediately below the air filter canister.

Undercarriage Inspection:

There were no visible fire effects to the undercarriage of the vehicle except minor soot build-up below the engine.

Fuse Panel Inspection:

All fuses were intact.

Area of Fire Origin:

Engine compartment at the carburetor/air filter location. Gasoline fuel vapor was most probably ignited by the adjacent electrical alternator.

Contributing Factors:

Ongoing fuel delivery issues.

Interview:

carrier/driver, provided the following information:

- Has been driving the subject LLV as his regular vehicle for the last two years.
- He began smelling gasoline when operating the LLV about four months before the subject incident.
- He is aware the vehicle has been in the shop for maintenance and the gas smell issue several times.
- The day or so before the fire, he was off-duty and alternate driver, was scheduled to take the subject LLV.
- Alternate driver said that she saw and smelled gasoline below the LLV, reported a problem, and took a different LLV on the route. The subject LLV was tagged for repair and left in place.
- When he returned to work he saw the repair tag and assumed the repairs had been made, and the supervisor said it was fixed, so used the subject LLV for his route. He now believes the repair was not made.

- He started his route at about 10 A.M. and noticed the gas smell was still present.
- He drove until about 4:30 P.M., and stopped for mail delivery at 4201 Cadden Court in San Diego, California.
- After dropping off the mail, he attempted to restart the LLV, but it would not start. He “pumped” the gas pedal about five or six times, and tried again. At that time he smelled smoke, got out of the vehicle and saw a “little fire” on the ground bellow the engine and smoke coming from the hood area. He opened the hood and there was fire at the air filter area.
- He grabbed a garden hose at the house and was able to put the fire out. The fire department was not called.

Evidence Collected:

No evidence was collected.

Service Records:

Ongoing fuel delivery issues (stalling and “gas smell”) noted in repair orders, beginning in March of 2017, and subsequent. Various repairs and replacement parts were used to correct the problem, however unsuccessfully. The throttle body gasket was replaced several times without resolution.

No records were noted indicating the throttle body was replaced, examined or rebuilt. Based on the ongoing issues, a cracked throttle body or worn component of the throttle body allowing an external fuel leak cannot be eliminated at this time as a source for this incident. Fuel line connections to the throttle body were tight; however, a pressure test of the fuel line connections would be required to eliminate the connections as a potential source of leaking fuel.

The past 12 months maintenance records for the LLV were provided and reviewed. After a review of the service records it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. Based on this information, maintenance, age, and degradation may have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,

RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

November 8, 2017
RCG File No. 71806370

Photograph 1
LLV Number 9213661.



Photograph 2
Engine compartment. Fire area at air filter canister, near center.



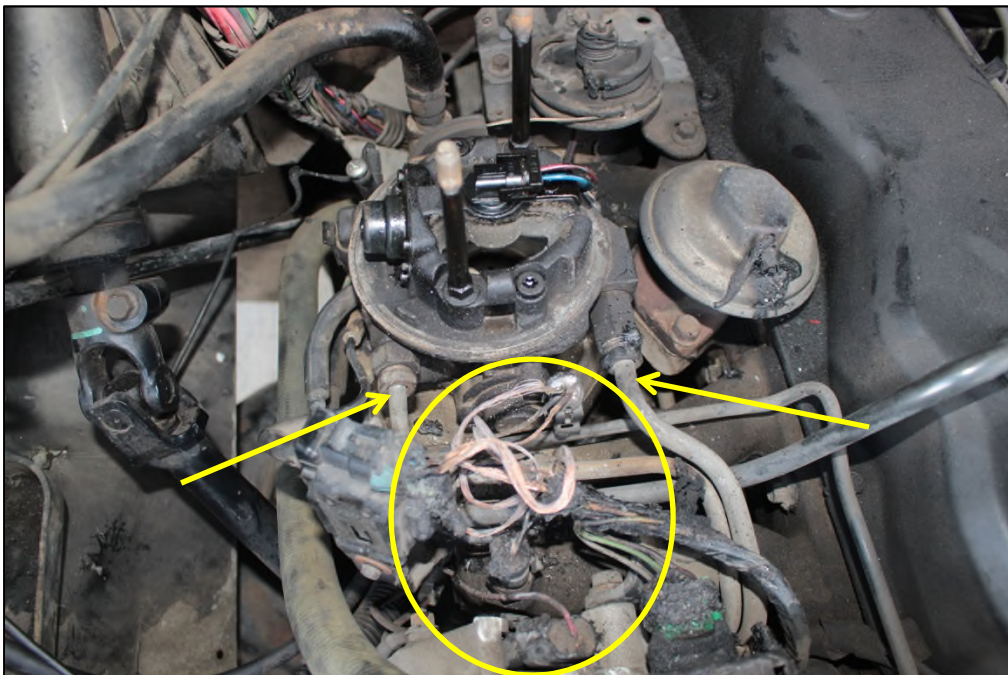
Photograph 3

Air filter scorched at bottom where rubber seal melted. Paper element relatively intact.



Photograph 4

Throttle body, center. Fuel lines, yellow arrows. Wire conductors, yellow circle.



November 8, 2017
RCG File No. 71806370

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
92 South Street
Hopkinton, Massachusetts 01748
(508) 620-2255 Telephone
(508) 620-7499 Facsimile

May 20, 2019

RCG File No: 044804258
LLV Number: 9214010
VMF Location: 171 Kennebec Street Portland, Maine
Subject: Preliminary/Final Report

Dear

On March 8, 2019, a fire involving US Postal Service vehicle LLV 9214010, VIN 1GBCS10E8L2302383 occurred. At the time of the fire, the vehicle was located in Eliot, Maine.

On March 19, 2019, Rimkus Consulting Group, Inc. was retained to examine LLV 9214010. Our inspection of the vehicle occurred on March 21, 2019, at the Vehicle Maintenance Facility. In the course of our work, we completed an onsite inspection of the vehicle, including photographing the vehicle, arc mapping and witness interviews. This report and case was reviewed for Technical Fire Manager David R. Meyers, IAAI-CFI (V).

In the course of our work, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, NFPA 921 - "Guide for Fire and Explosion Investigations" and NFPA 1033 - "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment in the area of the bulkhead on the left (mail) side of the vehicle.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
- 3 The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side, and the left side refers to the mail side. We observed that most of the vehicle structure on the operator's compartment had been consumed by fire. We observed the bulkhead of the vehicle sustained substantial fire damage near the center of the vehicle. There was no evidence to indicate that the LLV had recently been involved in a collision.

At the time of the exam, we observed both of the LLV tires on the front of the vehicle had been mostly consumed by the fire. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. Both front doors had been damaged by fire. The cab area roof had burned away.

Interior Inspection:

Examination of the interior of the vehicle revealed extensive fire damage to the driver's compartment. The dashboard had been consumed by fire. The driver seat had been consumed by fire. The cargo area had sustained damage to the roof and door. The area between the engine compartment and the driver's area had been consumed by the fire and the aluminum framing members were also consumed.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was fuel injected throttle body design. The engine was severely damaged by the fire and most of the components in the engine compartment were damaged or consumed by the fire.

Undercarriage Inspection:

The vehicle was towed into the maintenance facility and placed on a lift. The undercarriage was photographed and the most damage was confined to the engine area. The transmission was not damaged by the fire. The vehicle was equipped with a GM frame.

Fuse Panel Inspection:

The fuse panel had been completely consumed by the fire and the only remaining components were the conductors that were used in the fuse panel.

Area of Fire Origin:

Based on the statement by the driver the fire appears to have started in the left side towards the center of the engine. The driver reported that she saw flames dripping from the middle left side of the engine area towards the rear of the engine.

Potential Contributing Factors:

The vehicle had recent repairs to the injector throttle body in January of 2018. The vehicle has had issues with the brake lights. They were repaired in November of 2018 and in October of 2017. The throttle body was loose to the touch, we were able to move the body by hand clockwise and counter clockwise. The fitting appeared to be tight.

Evidence Collected:

We obtained an oil sample from the oil pan. The service tech was able to drill a hole into the oil pan and a sample was collected after letting the fluid drain first. A sample of transmission fluid was obtained using the same method. The report from the lab stated: "The transmission fluid sample had severe increased level of iron, aluminum, copper and tin indicating gear wear and or clutch wear was present. A light concentration of visible metal was also present." The engine oil sample indicated levels consistent with normal wear.

Interviews:

A phone interview was conducted with the driver. She stated that she was doing her route when the vehicle started to lose power. She then called the postmaster and reported the vehicle was running rough and she thought she could finish her route. She then started the vehicle and was driving for approximately a half hour when she noticed white smoke coming from the dashboard area. She then pulled over and exited the vehicle and when she walked away from the vehicle she saw fire dripping from the mail side of the vehicle towards the middle of the engine area. She stated that she did not have the heat, wipers, or headlights on that day. The only thing she had on was the flashers. She stated that she did not notice any odors prior to seeing the smoke. The vehicle was full of fuel when she started her route.

The postmaster was interviewed by phone. She stated that Ms. [redacted] called and reported that the vehicle was running rough and had no power. Ms. [redacted] felt that she could finish her route and the vehicle would go to the repair shop.

when she returned that day. Ms. stated that the vehicle was repaired at Bolz's Service located at 55 State Road Kittery, Maine.

During the inspection of the vehicle we noticed that the rubber fuel hoses that were located on the mail side near the rear wheels had been rubbing. The hose was held tightly together by a plastic retainer. The hose made the transition between the metal fuel lines. The fuel lines were inside the frame rail and needed to make the bend from around the rear wheel. The staff was informed about the issue and would pass along to the other repair facilities in their area. (See Photo number 11)

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Shawn P. Brecken

Shawn P. Brecken, IAAI, CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

May 20, 2019
Rimkus File No. 044804258

Photograph 1
Front of LLV.



Photograph 2
Driver's side.



May 20, 2019
Rimkus File No. 044804258

Photograph 3
Rear of vehicle.



Photograph 4
Mail side of vehicle.



May 20, 2019
Rimkus File No. 044804258

Photograph 5
Driver's compartment.



Photograph 6
Engine compartment.



May 20, 2019
Rimkus File No. 044804258

Photograph 7

View of undercarriage.



Photograph 8

Fuse panel area.



May 20, 2019
Rimkus File No. 044804258

Photograph 10
Battery area.

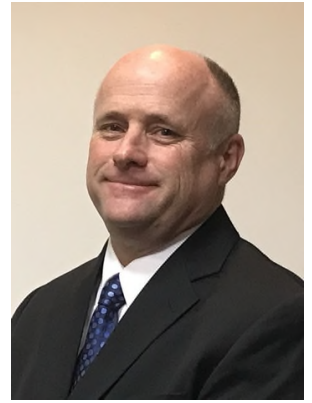


Photograph 11
Area where the rubber hoses were chafing.



May 20, 2019
Rimkus File No. 044804258

Curriculum Vitae



Shawn P. Brecken, CFI (V), CVFI, CFIE

Fire Consultant
Fire Division

Background

Mr. Brecken has an Associate Degree in Fire Science is a Certified Fire Investigator with the Motor Fire Vehicle Endorsement, a Certified Fire Explosive Investigator and Certified Vehicle Fire Investigator as well as an Emergency Medical Technician.

Mr. Brecken's professional career includes 35 years with the Marlborough Fire Department in the City of Marlborough, MA. In that capacity, he has been involved in many different emergency services including IAAI Certified fire investigator and front line supervisor. His duties included fire origin and cause determination, diagramming of fire scenes, interviewing witnesses and suspects, collection of evidence. He was also responsible for inspecting buildings to locate hazardous conditions and fire code violations, prepared investigative reports and assisted in the prosecution of fire code violators and arsonists.

As a forensic fire investigator with Rimkus, Mr. Brecken is responsible for investigating cause and origin of fires in the northeast. The area covers 6 states and all the coast lines of New England.

Contact Information

(508) 620-2255
sbrecken@rimkus.com

92 South Street
Hopkinton, MA 01748

Professional Engagements

- Emergency Response
 - Marlborough Fire Dept. - Marlborough, MA (2016-2017), Fire and explosion investigations included restaurant fires with fatalities, juvenile fires, fraud analysis and investigation, vehicle fire and explosions. Worked with state fire marshals and ATF on occasion.
- Education
 - Classroom Training - Massachusetts (2012-2019), Conducts practical driving program for municipal departments. The training follows the

NFPA and CDL requirements.

Forensic Engagements

- Fire/Explosion Investigations
 - Rhode Island (2019), USPS vehicle fire.
 - Massachusetts (2019), Garage fire caused by wood stove.
 - Massachusetts, Connecticut (2019), Several tractor trailer fires involving the tractor only.
 - Massachusetts (2018-2019), Moving truck fire.
 - Massachusetts (2018), USPS vehicle fire.
 - Massachusetts (2018), Vehicle recall of a vehicle fire (determined fire was from different cause).
 - Connecticut (2018), Fire involving trash recycling truck.
 - Connecticut (2018), Fire involving a residential house generator (mouse ate wires)
 - Massachusetts (2018), Accidental structure fire.
 - Massachusetts (2018), Structure fire in a canvas covered garage/workshop.
 - Massachusetts (2018), Kitchen fire.
 - Massachusetts (2018), House fire that was total loss building.

Professional Experience

- Rimkus Consulting Group, Inc. 2017 - Present
 - Fire Consultant - Fire Division
Responsible for investigating fire and causation in commercial facilities, residential structures, automobiles, marine vessels and heavy equipment. Investigates fires involving electrical devices, assesses potential liabilities and subrogation issues surrounding the incident. As case manager collects evidence, photographs, documents, conducts interviews with witnesses, fire departments, and state fire marshal and police agencies. Prepares detailed investigative reports pertaining to the origin and cause of fire losses.
- Marlborough Fire Dept. 1984 - 2017
 - Fire Investigator
Duties included investigating all fires in the city working with state and federal agencies. Primary role is to determine if the fire is intentional or accidental. If the fire is intentional, gathered all

evidence and complete the reports and pass along to the District Attorney's office for prosecution.

- Firefighter (1984-2016)
Administered medical aid as an emergency medical technician. Performed fire ground activities including; hose lays, set up of ladders and nozzle work. Operated all fire department equipment including; engine companies, ladder trucks and rescues. Conducted public education and information activities at schools and public events.

Education and Certifications

- Fire Science, A.S.: Quinsigamond Community College (2015)
- Emergency Medical Technician
- Certified Fire Investigator: International Association of Arson Investigator
- Certified Fire Explosive Investigation: National Association of Fire Investigators
- Certified Vehicle Fire Investigator: National Association of Fire Investigators
- Certified Fire Investigator: Metro Fire/Arson Investigation Association
- Firefighter of the Year (1993)
- Memberships: International Association of Arson Investigator; National Association of Fire Investigators; International Association of Arson Investigator, MA Chapter; Metro Fire/Arson Investigation Association

Continuing Education

- Motor Vehicle Fire Endorsement, IAAI (Sept. 2018)
- Motor Vehicle Fire Investigations, 20-hrs tested MA IAAI, (June 2018)
- CFITrainer.net
 - Knowledge 1 Motor vehicles Fire Tier 1, 8 hrs. tested, CFITrainer (May 18, 2018)
 - Motor Vehicles: Transmission, Exhaust, Brake, and Accessory Systems, 3 hrs. tested, CFITrainer.net (May 16, 2018)
 - Motor Vehicles: the Engine and the Ignition, Electrical, and Fuel Systems 3 Hours tested CFITrainer (May 16, 2018)
 - Investigating Motor Vehicle Fires, 4 hours tested CFITrainer.net, (March 19, 2019)
 - Legal Aspects of Investigating Youth Set Fires, CFITrainer.net (Jan. 7, 2017)

- Introduction to Youth Set Fires, CFITrainer.net (Dec. 27, 2016)
- Fire Investigator Scene Safety 3 hours tested CFITrainer.net (May 13, 2015)
- Documenting the Event 4 hours tested CFITrainer.net (March 20, 2015)
- Physical Evidence at the Fire Scene, 4 hrs. tested, CFITrainer.net (March 20, 2015)
- Introduction to Evidence 4 hours tested, March 20, 2015
- Investigating Motor Vehicle Fires 4 hours tested (March 19, 2015)
- Ethics and the Fire Investigator 3 hours tested (Jan. 17, 2015)
- Process of Elimination 3 hours tested (Sept. 3, 2014)
- Residential Electrical Systems Tested, 4 hrs. (April 18, 2014)
- Electrical Safety Tested 3 hrs. (April 2, 2014)
- Basic Electricity Tested 4 hrs. (April 2, 2014)
- Critical Thinking Solves Cases 4 hrs. tested (Feb. 9, 2014)
- Fire Protection Systems, 3 hrs. tested training program (July 13, 2011)
- Investigation Fatal Fires, 4 hrs. tested training program (March 23, 2011)
- Effective Investigation and Testimony, 3 hrs. tested training program, (July 13, 2011)
- Wildland Fires Investigation, 5 hrs. tested, training program (Dec. 9, 2010)
- Explosion Dynamics, 4 hour tested training program (Dec. 9, 2010)
- A Systematic Approach to the Investigation and Analysis of Post-Compartment Flashover Fires 6 hrs., tested, Auburn MA (Nov. 16, 2017)
- Investigation of PV Fires 6 hours tested Lawrence ma MAIAAI (Sept. 21, 2017)
- Youth Set Fire Pilot 2017 16 hours tested IAAI Bowie MD (Jan. 11-12, 2017)
- Recertification NAFI Certified Fire and Explosion Investigator (Dec. 21, 2016)
- National TIM Training Certificate 10 hrs. online tested (Dec. 5, 2016)
- Lithium-Ion Batteries for the fire Investigator 6 hrs. tested, Auburn MA (Nov. 17, 2016)
- Fire Science for the Fire Investigator/1033 6 hrs. tested, Auburn MA (Nov. 19, 2015)
- Fire Arson Origin & Cause Investigation, 32 hrs. tested, National Fire Academy (Oct. 5-16, 2015)
- Haz-Mat Safety 6 hours tested Maynard Rod & Gun Club (Sept. 17, 2015)
- Industrial Fires & Explosions 6 hours tested Auburn MA (Nov. 20, 2014)

- Fundamentals of residential building construction 3 hours tested CFI trainer.net (Oct. 1, 2014)
- National Grid Distribution Overview, 6 hrs. tested, Maynard MA (Sept. 18, 2014)
- Investigating the Vehicle Fire, 6 hrs. tested, Lynn MA (June 3, 2014)
- Indoor Post Blast School, 40 hrs. tested, F.B.I., Norwich, CT (May 19, 2014 - May 23, 2014)
- Furnaces, NFPA 921&Daubert Tested 6 hrs., Chicopee MA (March 20, 2014)
- Identify, Collect& Processing Evidence, 6 hrs. tested, Boston MA (Jan. 16, 2014)
- Certified Fire Investigator International assoc. of Arson Investigators (Nov. 22, 2013)
- Cheshire Arson/Triple Murder Tested for 6 hrs., Auburn MA (Nov. 21, 2013)
- Partnering with Utilities, 6 hrs. tested, Maynard, MA (Sept. 19, 2013)
- NFPA1033 and Your Career, 2 hrs. tested training program, Online (July 24, 2013)
- Final Alarm, Investigating Fire Fighter Fatalities, 6 hrs. tested, Boston, MA (March 26, 2013)
- Investigative Case Studies, 6 hrs. tested, seminar, Maynard, MA (Sept. 20, 2012)
- Impacts of NFPA 1033, 6 hrs. tested, seminar, Auburn, MA (Nov. 15, 2012)
- Firefighter Safety Investigations, 16 hrs. training, Marlborough, MA (April 17-18, 2012)
- Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 32 hrs. tested course, Lexington, KY (Sept. 12-15, 2011)
- Background Investigations, 8 hrs. training, State Police (Dec. 13, 2011)
- National Fire, Arson, & Explosion Investigation Training Program, 30 hrs., Course, Boston, MA (March 8-11, 2010)
- Cell Phone Technology, 16 hrs., Hampton, NH (Oct. 18-19, 2011)
- Fire/Arson Fatality Fire Scene Investigation, 16 hrs. tested, Concord, NH (Sept. 27-28, 2010)
- Battery Involvement in Fire: Cause or Effect, 6 hrs. tested, Seminar, Auburn, MA (March 19, 2009)
- Evidence Collection & Solving Arson in Massachusetts, 6 hrs., Comprehensive Fire and Arson Investigation Seminar, Maynard, MA, (June 18, 2009)
- Clandestine Chemical Labs, 6 hr. tested, Seminar, Auburn, MA (March 20, 2008)
- Abandoned Buildings Project & 921 Code Updates for "Large Scale Fire

- Investigations", 8 hrs. tested, Seminar, Maynard, MA (Sept. 18, 2008)
- Hands-On Electrical Fire/Arson Investigation, 20 hrs. tested, Course, Hudson, MA (Oct. 13-15, 2008)
 - Fire Alarm & Automatic Sprinkler systems, 6 hr. tested, Seminar, Auburn, MA (March 15, 2007)
 - Post Blast Investigator School, 16 hrs., Course, Wilmington, MA (May 15-16, 2007)
 - Fire Pattern Certification, 21 hrs. tested, Course, Marlboro, MA (Oct. 29-31, 2007)
 - Motorcycle Outlaw Gangs and Their Crimes, 6 hrs., Comprehensive Seminar, Sturbridge, MA, (March 26, 2006)
 - Vehicle Fire Investigation, 16 hrs., Class, Stow, MA, (June 2006)
 - Commercial Kitchen Systems, 6 hrs. tested, Seminar, Boston, MA (Sept. 21, 2006)
 - Advanced Course on the Reid Technique of Interview and Interrogation, Stow, MA (Jan. 21, 2005)
 - Explosives & Bomb Threat Familiarization, 6 hrs., Comprehensive Fire and Arson Investigation Seminar, Maynard, MA (Sept. 15, 2005)
 - Responding to Terrorist Incidents in Your Community, 32 hrs., Course, Reno, NV, (Oct. 10-13, 2005)
 - The Reid Technique of Interviewing and Interrogation, Stow, MA (Jan. 13-15, 2004)
 - The Largest Arson Case in Boston History, 6 hrs. tested, Seminar, North Andover, MA (March 13, 2003)
 - Incident Response to Terrorist Bombings, 32 hrs. tested, Course, Socorro, NM (March 31-April 3, 2003)
 - Heating System Fires, 6 hrs. tested, Seminar, Maynard, MA, (Sept. 18, 2003)
 - Post Fire Investigation of Electrical Components, 6 hrs. tested, Seminar, Boston, MA (Jan. 17, 2002)
 - Fire Scene Reconstruction and Documentation, 6 hrs. tested, Seminar, North Andover, MA, and (March 14, 2002)
 - Advanced Fire Investigation, 40 hrs., Class, Stow, MA (June 2002)
 - Explosives, Secondary Device Explosions and their Investigation, 6 hour tested, Seminar, Maynard, MA (Sept. 19, 2002)
 - Arson Seminar, 3 Continuing Education Units Tested, Manchester, NH (May 21-25, 2001)
 - Arson Fraud Claims Defense Tactics, 6 hrs. tested, Seminar, North Andover, MA (March 22, 2001)

- Fireplace and Chimney Fires, 6 hrs. tested, Seminar, Maynard, MA (Sept. 20, 2001)
- Basic Fire Science and Fire Investigation, 12 hrs. tested, Seminar, Franklin, MA (Nov. 14-15, 2001)
- Basic Fire Investigation, 48 hrs., Stow, MA (Dec. 2001)



Rimkus Consulting Group, Inc.
651 Holiday Drive, Suite 300
Pittsburgh, PA 15220
Telephone: (412) 857-3002

December 6, 2019,

Re: RCG File No: 100018789
LLV Number: 9214662
VMF Location: 200 Cava Drive Clarksburg, West Virginia
Subject: Preliminary/Final Report

On November 2, 2019, a fire involving USPS LLV 9214662 occurred. The loss location was reported to be 400 Rayon Drive in Parkersburg, West Virginia. LLV 9214662 was examined at the VMF located at 200 Cava Drive in Clarksburg, West Virginia.

Rimkus Consulting Group, Inc. was retained to examine the 1990 LLV 9214662 with VIN 1GBCS10E5L2303068. During our investigation we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver and documented the vehicle with photographs. In the course of our work, the vehicle examination was conducted by Fire Consultant Brian L. Balega, IAAI-CFI (V), on November 7, 2019. This report was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association NFPA 921 – “Guide for Fire & Explosion” and NFPA 1033 – “Standard for Professional Qualifications for Fire Investigator”.

Conclusions

1. The fire originated in the driver’s compartment, on or near the steering column where the turn signal components were located then spread to the combustibles on the driver’s seat.

2. The vehicle's hazard fuse socket location was found to have an oversized fuse. The panel indicated a 15-amp fuse should be used and a 30-amp fuse was observed inserted into the socket. The vehicle Turn B/U fuse socket contained a 15-amp fuse with an accessory connection attached. We found this fuse intact but had evidence of internal heating. The blade of the fuse, which sustained heating, was the same blade that had the accessory connection attached.
3. Through reviewing the history of maintenance on the vehicle, we determined the suspect turn signal switch (part #199798) had been replaced April 12, 2008, and March 04, 2019.
4. The specific ignition sequence and cause of the fire was determined to be due to an adverse electrical event involving the turn signal switch within the steering column.

Observations

Exterior Inspection:

No exterior fire damage was observed on the vehicle. All windows were intact. There was no indication that the vehicle had been involved in a collision or accident prior to the fire. All four tires were in normal operating condition.

Interior Inspection:

The interior of the vehicle sustained moderate smoke/soot damage throughout. The driver's seat, steering column, dash and headliner directly above the seat sustained fire damage. The interior side of all the windows were severely stained with smoke/soot. The driver's seat sustained the greatest fire damage.

Engine Compartment Inspection:

No fire damage was observed within the engine compartment. The vehicle was equipped with a 2.5 liter four-cylinder engine with a high output ignition coil.

Undercarriage Inspection:

No fire damage was observed on the underside of the vehicle. The LLV was mounted on a GM chassis.

Fuse Panel Inspection:

The fuse panel was found intact. All fuses were intact. The vehicle's hazard fuse socket location was found to have an oversized fuse. The panel indicated a 15-amp fuse should be used and a 30-amp fuse was observed inserted into the socket. The

vehicle Turn B/U fuse socket contained a 15-amp fuse with an accessory connection attached. We found this fuse intact but had evidence of internal heating. The blade of the fuse, which sustained heating, was the same blade that had the accessory connection attached.

While inspecting the fuse panel, it was observed with water intrusion at the top of the box and draining downward towards the rear of the fuse block.

Area of Fire Origin:

The fire originated in the driver's compartment, on or near the steering column where the turn signal components were located then spread to the combustibles on the driver's seat.

Potential Contributing Factors:

A failure of the turn signal switch could not be eliminated as a cause of the fire.

Service Records:

Through reviewing the history of maintenance on the vehicle, we determined the suspect turn signal switch (part #199798) had been replaced April 12, 2008, and March 4, 2019.

Evidence Collected:

No evidence collected.

Interview:

Program manager, United States Postal Service, provided the following information:

- He advised that the postal inspectors had reviewed the available surveillance footage of the incident. They did not observe anyone messing with the vehicle or walking in the parking area. They didn't observe any fires.

Review of information provided

Written driver's statement:

- The day prior to the fire, she parked the vehicle, emptied the vehicle of her personal contents, locked the vehicle and returned the key.

- She discovered a fire had occurred when she unlocked the vehicle the following day to pre-trip the vehicle to be driven.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Brian L. Balega

Brian L. Balega, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-FI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

December 6, 2019
Rimkus File No. 100018789

Photograph 1

A photograph of the front of the vehicle, the front windshield was darkened due to smoke/soot on the inside.

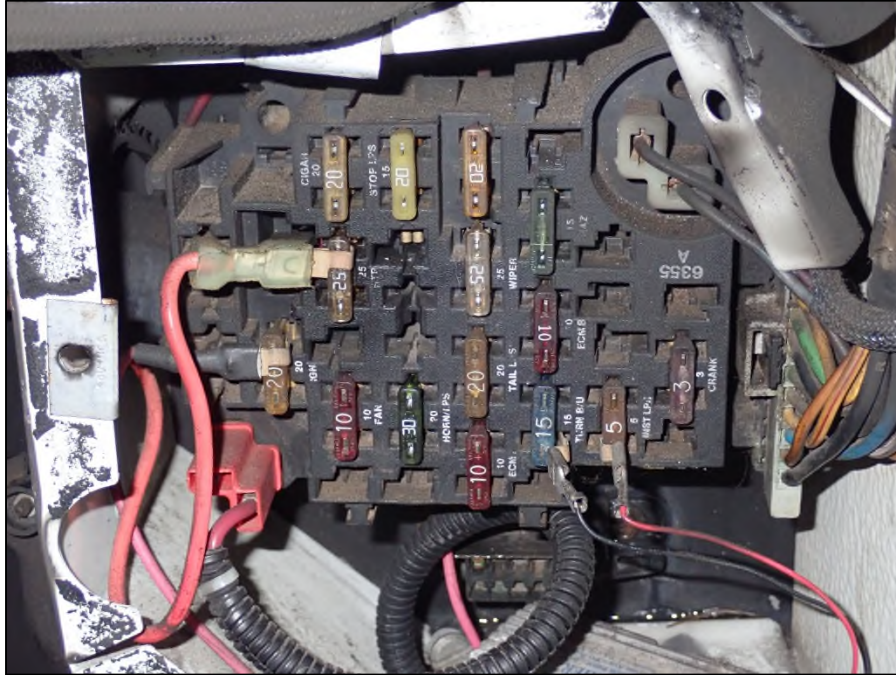


Photograph 2

A photograph of the driver's compartment and area of fire origin.



A photograph of the fuse block located under the driver's side dash.

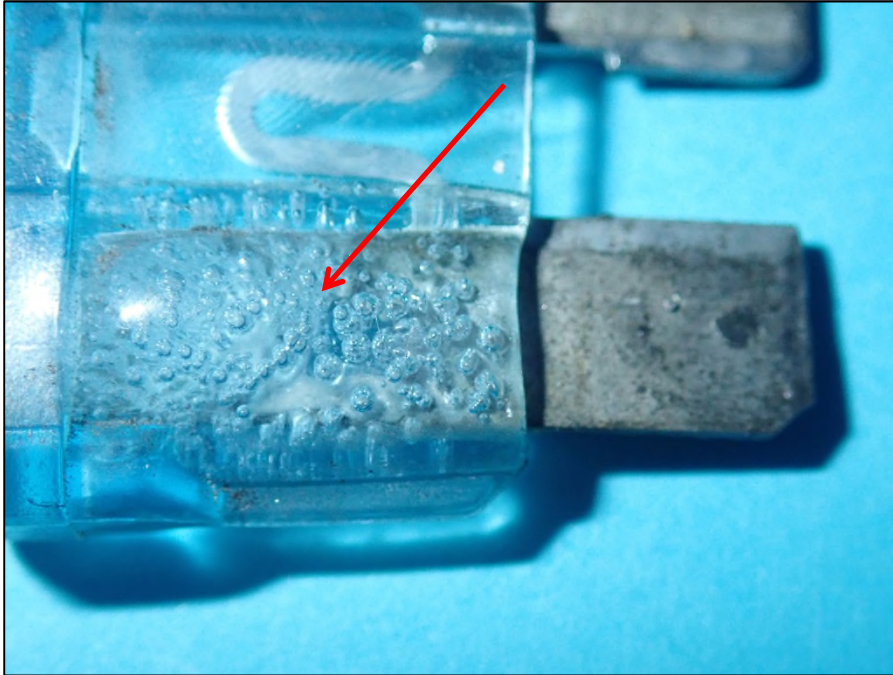


A photograph of the underside of the underside of the steering column.



Photograph 5

A photograph of the 15amp fuse designated for the turn signals. The arrow identified bubbling of inside of protective plastic covering of fuse due to internal heating.



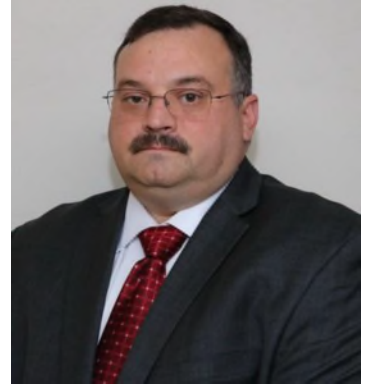
Photograph 6

Engine compartment.



December 6, 2019
Rinkus File No. 100018789

Curriculum Vitae



Brian L. Balega, CFI(V), CFEI

Senior Consultant

Fire Division/Pittsburgh District

Background

Mr. Balega studied Criminal Justice and Investigations during his undergraduate career, earning a B.S.O.E. degree in Human Services/Criminal Justice from Wayland Baptist University. This U.S. Army veteran has spent more than 20 years of his career in fire and police services, where he has investigated and determined the origin and cause of more than 600 fires involving commercial and residential structures, passenger vehicles, marine vessels, and heavy equipment.

Mr. Balega is a Certified Fire Investigator with Vehicle Endorsement (CFI(V)) with the International Association of Arson Investigators (IAAI) and a Certified Fire and Explosion Investigator (CFEI) with the National Association of Fire Investigators (NAFI). He possesses extensive knowledge of fire and criminal investigations due to his experiences as a Police Officer with the Anchorage Police Department, as a Federal Task Force Officer with the Drug Enforcement Administration, and as a Fire Investigator with the Anchorage Fire Department. He is also a court-qualified expert witness in both criminal and civil proceedings. As a fire investigation expert, Mr. Balega has instructed numerous educational seminars and provided training to other industry professionals throughout his career. In 2012, Mr. Balega was honored with the State of Alaska Fire Service Instructor of the Year award for teaching members of state and local fire/police departments the foundational aspects of fire

Contact Information

(412) 952-5275

bbalega@rimkus.com

651 Holiday Drive,
Suite 300
Pittsburgh, PA
15220



Rimkus North Carolina, PLLC
5900 Northwoods Business Pkwy, Suite J
Charlotte, NC 28269
(877) 896-6227 Telephone
(704) 896-6228 Facsimile
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2016

August 23, 2016

Re: RCG File No: 47107183
LLV Number: 9215781
VMF Location: 6401 Rivers Avenue in Charleston, South Carolina
Subject: Final Report

Rimkus North Carolina, PLLC was retained to examine LLV 9215781, VIN 1GBCS10E4L2304101. The vehicle was examined at the USPS Charleston VMF located at 6401 Rivers Avenue in Charleston, South Carolina. The fire incident reportedly occurred at 790 Howard Avenue in Myrtle Beach, South Carolina on June 13, 2016.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on June 23, 2016. Our work to complete this assignment was performed by Fire Consultant David R. Meyers, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin within the engine compartment was determined to be in the engine compartment at the carburetor.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of the supervisor, who was called to inspect the vehicle, attempted numerous times to start the vehicle, which caused the carburetor and air filter to become saturated in fuel. A backfire through the carburetor occurred, thus igniting fuel vapors in the air filter.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. Minor smoke staining was visible in the center of the hood below the windshield. All remaining sides of the vehicle sustained no fire damage.

Interior Inspection:

Examination of the interior of the vehicle revealed no fire damage.

Engine Compartment Inspection:

The engine compartment was examined. Fire damage was observed along the rear of the engine at the air filter and carburetor. The air filter cover and filter were either removed during fire suppression activities or by the operator working on the LLV at the time of the fire. Remains of the air filter were not located. Electrical wires that transverse the area above the air filter and carburetor were damaged by fire and were thermally damaged, thus eliminating them as a cause. The fuel system was examined and found to be intact with no damage noted. The fuel filter was intact and located along rear of the engine near the fire wall. The fuel system was the GM model. The battery for the vehicle was located at the front right side of the engine compartment and had moderate fire damage to the front left corner of the battery. The battery, the battery terminals, and battery cables were examined and found to be damaged by thermal damage only, no adverse electrical activity was observed. The battery, battery terminals, and battery cables were eliminated as a cause of the fire. The carburetor was examined and observed with fire damages to the top portion of the carburetor where the air filter housing was mounted. Based on the fire patterns observed, the engine carburetor within the engine compartment was determined to be the area of origin.

Undercarriage Inspection:

Examination of the undercarriage revealed no damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed no fire damage and none of the fuses were observed blown.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment at the carburetor.

Contributing Factors:

The LLV reportedly was sputtering when driven and the carrier could not get it started after numerous attempts. The supervisor was called to inspect the vehicle and attempted numerous times to start the vehicle. This caused the carburetor and air filter to become saturated in fuel. A backfire through the carburetor occurred, thus igniting fuel vapors in the air filter.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

On June 23, 2016, an interview via telephone was conducted with USPS Supervisor at the Myrtle Beach office, who was attempting to start the vehicle at the time of the fire. He reported the following information:

- He was called to the location for an LLV that was sputtering when running and they could not get it started.
- He said he attempted to start the vehicle by cranking the motor for approximately 15 seconds. While cranking the motor, the vehicle attempted to start and he heard a pop come from the engine.
- He observed a discoloration occurring to the hood and saw flames coming from under the hood. He stated he then called 911.

- He stated that they have had several mechanical issues with this vehicle in the past and that this was not the first time that this type of incident had occurred with this vehicle.

Service Records:

A review of the service records for the involved LLV did not indicate any recent repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NORTH CAROLINA, PLLC

David R. Meyers

David R. Meyers, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 23, 2016
RCG File No. 47107183

Photograph 1
Front of vehicle.



Photograph 2
Hood damage to vehicle.



August 23, 2016
RCG File No. 47107183

Photograph 3
Right side of vehicle.



Photograph 4
Left side and rear of vehicle.



August 23, 2016
RCG File No. 47107183

Photograph 5
Interior of vehicle.



Photograph 6
Dashboard of vehicle.



August 23, 2016
RCG File No. 47107183

Photograph 7

Rear cargo area of vehicle.



Photograph 8

Engine compartment hood, observe the fire damage to the driver's side of the hood.



Photograph 9

Engine compartment and lower portion of the air filter housing; observe the fire damage to the interior portion of the air filter housing.



Photograph 10

The lower portion of the air filter housing, observe the fire damage to the interior portion of the housing.



Photograph 11

The driver's side area of the engine compartment, observe the thermal damage to the battery and the components in the area.



Photograph 12

A closer view of the battery, battery terminals, and battery cables; observe no adverse electrical activity.



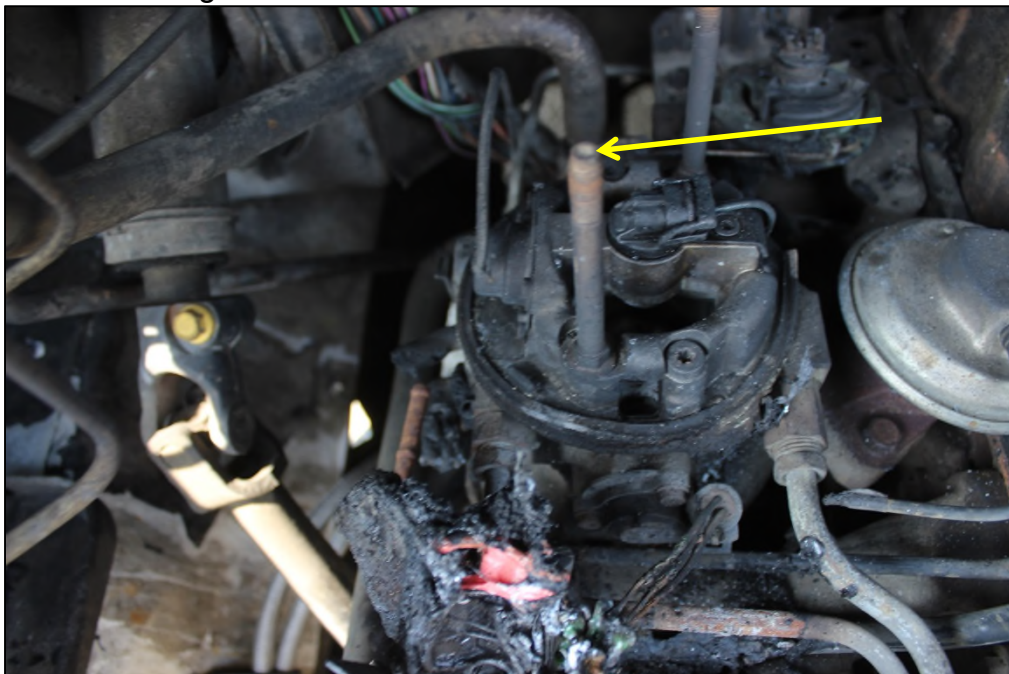
Photograph 13

The top side of the engine and the carburetor area.



Photograph 14

The carburetor and air filter housing bolt, observe no debris or remains of the plastic wingnut for the housing.



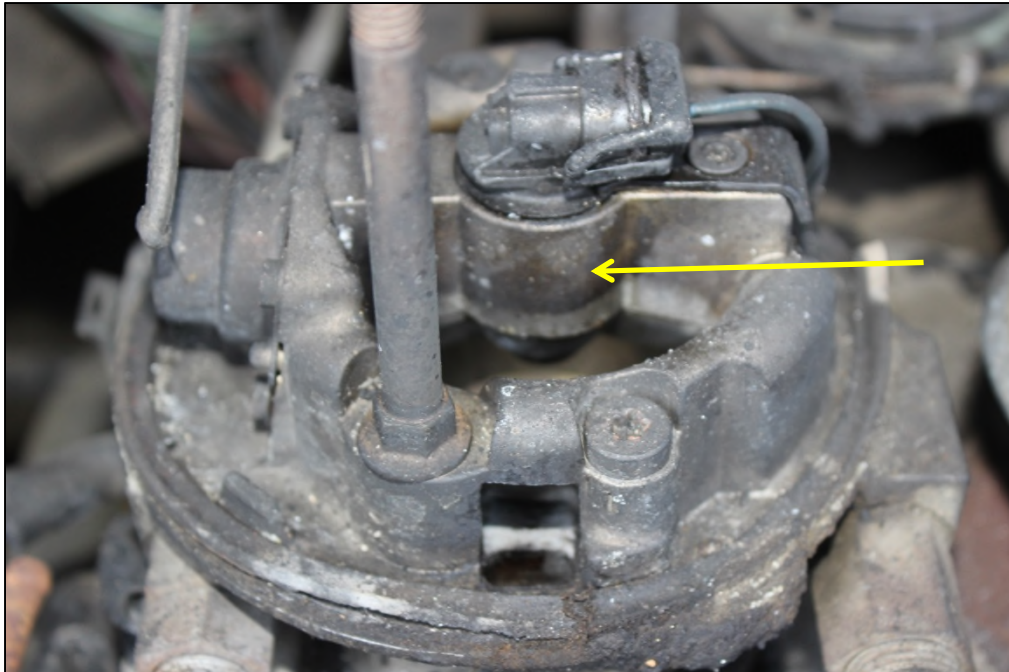
Photograph 15

A closer view of the carburetor, observe the discoloration to the top portion of the carburetor.



Photograph 16

A closer view of the carburetor, observe the discoloration to the top portion of the carburetor.



August 23, 2016
RCG File No. 47107183

CVs



DAVID R. MEYERS, IAAI-CFI FIRE CONSULTANT

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Kaplan University,
Bachelors in Fire Science, Current Student (2015 Graduation)

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
13900 Alton Parkway Suite 123
Irvine, California 92618
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

August 21, 2018

Re: RCG File No: 71807097
USPS LLV Number: 9215802
VMF Location: 1900 West Redlands Blvd. San Bernardino, California
Subject: Preliminary/Final Report

Dear

On July 17, 2018, a fire occurred involving USPS LLV 9215802. The loss location was reported to be 2823 Pleasant Street in Riverside, California. LLV 9215802, VIN 1GBOS1OE0L2304175 was examined at the VMF located at 1900 West Redlands Avenue in San Bernardino, California.

Rimkus Consulting Group, Inc. was retained to examine LLV 9215802 to determine the cause of the fire. During our investigation, we conducted an examination of the fire damaged LLV, conducted an interview with carrier/driver and documented the vehicle with photographs. In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on July 23, 2018. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 Standard for "Professional Qualifications for Fire Investigator".

Conclusions

1. The fire was determined to have originated in the engine compartment of the LLV 9215802.

2. The area of fire origin was determined to be on the left side of the engine where the flexible fuel lines transition between the frame mounted rigid lines to the engine mounted rigid fuel filter and return lines.
3. The cause of the fire was determined to be ignition of leaking gasoline vapor where a flexible fuel high pressure or return line failed/cracked and leaked due to close proximity and long-term heat exposure from the exhaust header (1 1/4") and transition flange (5/8"). The alternator provided a potential ignition source for the gasoline vapor.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. The LLV sustained severe fire and heat effects to the majority of the body and contents. Fire patterns generally vectored slightly upward from the front toward the rear. The rear cargo compartment sides remained upright, but sustained melting and heat effects diminishing to the rear. The entire roof was melted from fire heat. The engine compartment hood was completely melted from fire heat. The right and left front fenders were melted at the wheel well areas. The front grill remained intact, except at the left front, where fire heat consumed paint, leaving heat damaged exposed metal.

Interior Inspection:

The carrier compartment was completely destroyed by fire heat. All combustible components were consumed or severely charred.

The cargo compartment was destroyed by fire heat, with heat effects diminishing slightly to the rear cargo door.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.2L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. The engine compartment sustained the most significant damage at the left side of the engine, near the junction of the rear of the engine and firewall/bulkhead. Fire pattern analysis evidenced an origin in this area. All components in the engine compartment sustained fire and heat effects, with damage diminishing slightly to the front and right side.

Examination of the origin area evidenced the total consumption of the flexible fuel high pressure and return lines. The fuel filter was attached to the left rear corner of the engine, evidencing the fuel filter relocation/modification had not been performed on this LLV. Measurements of the engine mounted rigid fuel lined evidenced a space between the flexible lines and the engine exhaust header and transition flange ranged from 5/8" to 1 1/4 ".

Undercarriage Inspection:

The LLV was mounted on a GM general frame and was undamaged. The fuel tank did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head. All four tires were intact at the time of the fire.

Fire damage and effects were visible to the undercarriage below the engine compartment diminishing significantly to the rear of the LLV.

Fuse Panel Inspection:

The fuse panel was consumed by the fire. We were unable to examine the fuse panel due to the severe fire damage and mass loss.

Area of Fire Origin:

The fire originated in the engine compartment near the left rear section of the engine, where a fuel leak developed, the vapors of which were ignited potentially remotely by the engine alternator.

Potential Contributing Factors:

Normal wear and degradation of the flexible fuel lines located within the area of origin involving heat exposure to the fuel lines located in close proximity to the engine exhaust header, flange, and exhaust pipe.

Evidence Collected:

No evidence was collected.

Service Records:

A review of the provided service records for the involved LLV was conducted. After a review of the service records it was determined that no maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. However, a vacuum line was reconnected 12 days prior to the fire, and was again repaired the morning of the fire. A high idle was also detected, but the cause was not known.

Interview:

Ms. carrier/driver, United States Postal Service, provided the following information: She began her delivery route at 8:45 A.M. and the fire occurred at about 2:45 P.M. The LLV ran normally but was hard to start, and when the engine was in park and idling, the idle would be fast. The LLV was in the shop the morning of the fire for the same problem (fast idle) it had been having this issue for a while.

Most deliveries before the fire were to mounted boxes at curbsides which allowed her to remain in the vehicle. But then she got to other mail boxes that required her to get out of the LLV and that was when she noticed white smoke coming from under the LLV at the right side near the wheel well. She did not know if there was smoke at the left side because she couldn't see that area. Within about one minute, smoke then came into the cab so she got out and away from the LLV. When she got a distance away, she could then see fire on the ground below the engine. She could not specify the exact location of the flames.

(Comment: The fast idle may have been a result of the developing fuel leak at the left side of the engine at the flexible fuel lines located below the air filter intake. This condition would provide additional gasoline vapor into the engine, resulting in a high idle condition.)

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curricula Vitae

August 21, 2018
RCG File No. 71807097

Photograph 1

LLV 9215802, left front of vehicle.



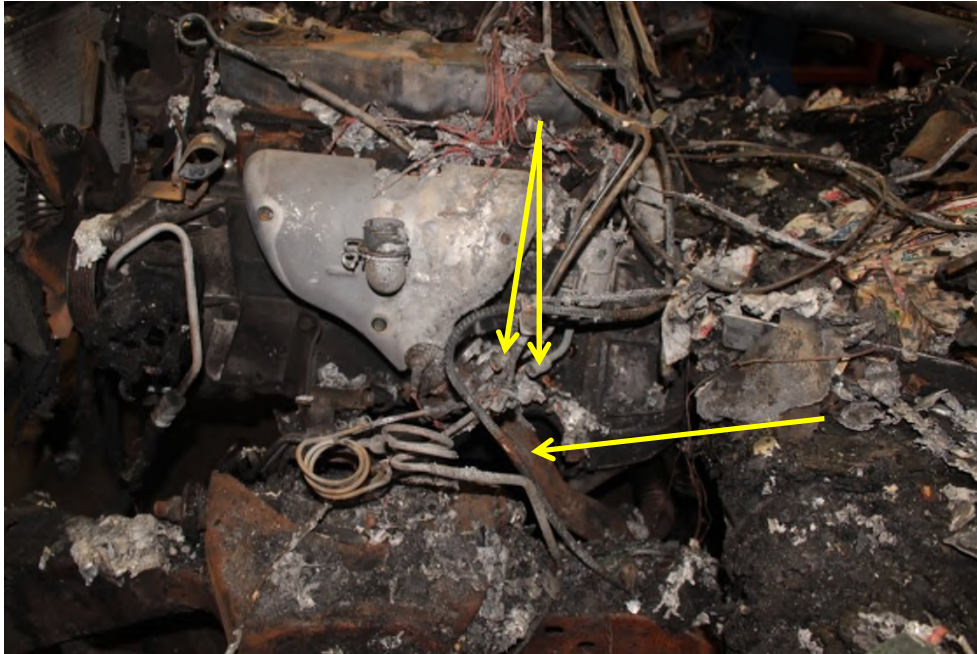
Photograph 2

Engine compartment, foreground. General area of origin, yellow arrow.



Photograph 3

Engine, left side. Fuel line connectors, yellow arrows. Exhaust pipe, bottom arrow.



Photograph 4

Fuel line connector, top center, clearance to exhaust header flange.



August 21, 2018
RCG File No. 71807097

Photograph 5
View of undercarriage.



August 21, 2018
RCG File No. 71807097

Curricula Vitae



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of: National Fire Protection Association (NFPA)
 North Carolina International Association of Arson Investigators
 International Association of Arson Investigators
 North Carolina Firefighters Association
 International Association of Fire Chiefs
 International Association of Fire Marshals
 National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
4801 Northwest Loop 410, Suite 700
San Antonio, TX 78229
(866) 202-3747 Telephone
(210) 520-4357 Facsimile
Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2016

September 21, 2016

Re: RCG File No: 30303264
LLV Number: 9216047
VMF Location: 10410 Perrin Beitel Road in San Antonio, Texas
Subject: Preliminary/Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 9216047, VIN 1GBBS1OE3K2300857. The vehicle was examined at the USPS San Antonio VMF located at 10410 Perrin Beitel Road in San Antonio, Texas. The fire incident occurred on July 29, 2016, near 501 West 15th Street in Del Rio, Texas.

In the course of our work, we examined and documented the fire damaged vehicle and interviewed witnesses on August 10, 2016. Our work to complete this assignment was performed by Fire Consultant Nicholas Olson, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was determined to be on the left (mail) side of the engine compartment at and around the rubber fuel lines in close proximity to the exhaust manifold.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the rubber fuel lines which allowed atomized gasoline to spray onto the hot surface of the operating exhaust manifold and ignited.

Observations

Exterior Inspection:

For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. The front of the vehicle was partially intact with the front bumper and grille in place. The hood and both front fenders were mostly consumed in the fire. The windshield frame, bulkhead, dash and the right door were mostly consumed in the fire. The left side door was partially intact. The roof of the vehicle was partially consumed. The rear of the vehicle was mostly intact, although heavily fire damaged.

Interior Inspection:

The interior of the vehicle sustained fire damage throughout. A near complete consumption of the bulkhead, dash and drivers compartment was exhibited. The rear cargo area remained intact, although heavily fire damaged.

Engine Compartment Inspection:

The engine compartment exhibited heavy fire damage with a near complete consumption of surrounding body panels. All combustible vehicle components within the left side of the engine compartment were consumed. The right side of the engine compartment exhibited some remains of hoses and wiring insulation. The severe fire damage within the left side of the engine compartment was centered on the exhaust manifold and fuel system. The fuel system was GM equipment and was located on the left side of the engine. The fuel filter and the steel fuel lines were intact and exhibited no evidence of a failure. The rubber fuel lines were completely consumed. The left side of the radiator exhibited material loss. Based on the observable fire patterns, the fire originated on the left side of the engine compartment. Physical evidence that the vehicle was equipped with a High Energy Ignition (HEI) distributor was not observed.

Undercarriage Inspection:

The undercarriage was examined with slight fire damage noted beneath the engine compartment. The fire damage beneath the vehicle was consistent with burning material falling from above. Remaining areas of the undercarriage were unremarkable.

Fuse Panel Inspection:

The fuse panel was unable to be inspected due to the severe degree of fire damage.

Area of Fire Origin:

Based on the observable fire patterns and the remaining physical evidence, it was determined the fire originated on the left side of the engine compartment near the exhaust manifold and fuel lines. This was the single area of fire origin identified.

Contributing Factors:

The vehicle was being operated at the time of the fire. Based on the remaining physical evidence and the available information, the most probable cause of the fire was a failure of the fuel line(s), resulting in a release pressurized fuel which was ignited by hot surfaces of the exhaust system.

Evidence Collected:

No evidence was collected.

Interviews:

A telephone interview of the carrier was conducted. He reported the following information:

- He was operating the vehicle at the time of the fire.
- All was normal and the vehicle had been in operation for several hours prior to the fire.
- He turned a corner and heard a "hiss" followed by a "pop" and the engine died.
- He reported gray smoke was immediately visible from under the hood. The smoke quickly changed from gray to black. Flames were noticed under the hood a short time later.
- The fire progressed from the engine compartment to the remaining vehicle.

Service Records:

A review of the service records for the involved LLV indicated that there had been repair work completed on July 22, 2016, prior to the fire. Records indicated that the fuel filter had been replaced and also stated "Fuel – Line filter (secure)". It is likely that the fuel line connection point may have been damaged. Degradation of the rubber hoses due to radiant heat, if any, should have been observed during this service and replaced if necessary.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Nicholas J. Olson

Nicholas J. Olson, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

September 21, 2016
RCG File No. 30303264

Photograph 1

Front of involved vehicle, LLV 9216047.



Photograph 2

Rear of involved vehicle.



September 21, 2016
RCG File No. 30303264

Photograph 3

Engine compartment and interior of involved vehicle.



Photograph 4

Engine compartment of involved vehicle.



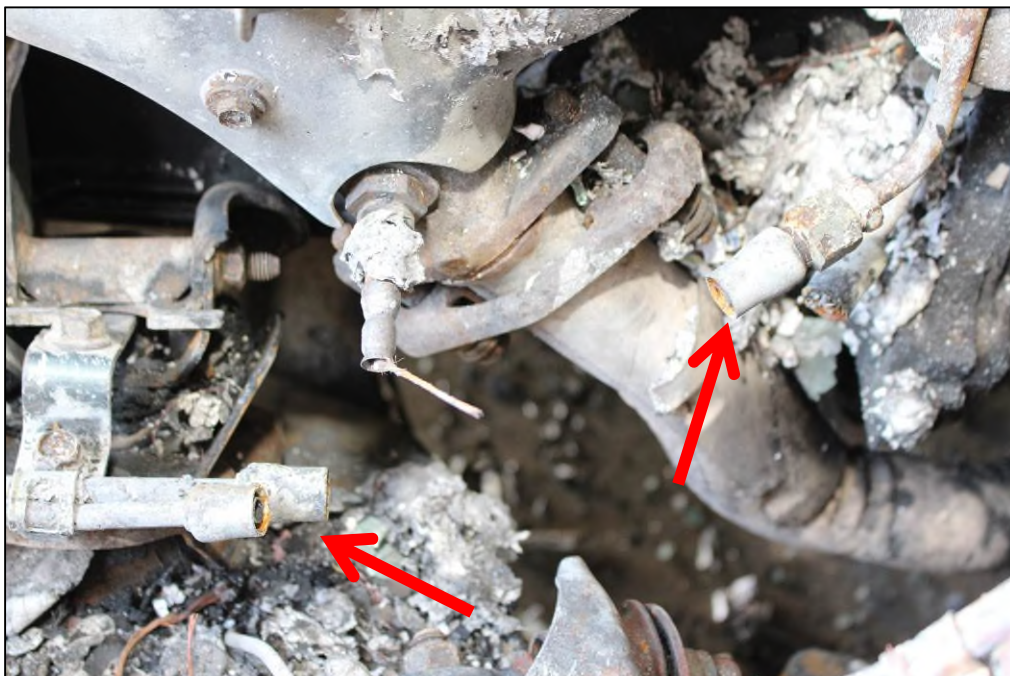
Photograph 5

Left side of engine compartment; area of fire origin.



Photograph 6

Area of fire origin; fuel system components.



September 21, 2016
RCG File No. 30303264

CVs



**NICHOLAS J. OLSON, AAS, IAAI-CFI, NAFI-CFEI
FIRE CONSULTANT**

Mr. Olson is a Certified Fire Investigator (CFI) by the International Association of Arson Investigators and a Certified Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators (NAFI). Additionally, he holds active certifications in Texas as a Fire Investigator, Police Officer, Firefighter, Fire Inspector, and Paramedic. He obtained his Texas Master Peace Officer certificate in 2010 and continues to serve his community as an officer, firefighter, and paramedic. In 2002, Mr. Olson graduated with his Associates Degree in Criminal Justice from Temple College in Temple, TX; however, he continues his pursuit of education through extensive continuing education and professional development training.

Mr. Olson has extensive experience in both the fire service and law enforcement with over 11 years as a full time, public safety professional. As a fire investigator, Mr. Olson's experience includes determining the origin and cause of fires in residential and commercial structures, vehicles, and outdoor land areas; in addition, he was responsible for evidence collection, storage and maintaining chain of custody documentation for all municipal arson cases. Mr. Olson has experience in all facets of investigational procedures and has successful convictions in arson cases. Through his work, he has experience with fire fatality scenes and developed positive working relationships with local, state, and federal authorities.

Mr. Olson continues to serve as an instructor in law enforcement and emergency medical services. He is an adjunct instructor with Temple College in the Criminal Justice department and EMS Professions department.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

IAAI – CFI (Certified Fire Investigator) (Certificate Number 03-030629)
NAFI – CFEI (Certified Fire and Explosion Investigator) (Registration Number 11853-6580)
Temple College - Associates of Applied Science, Criminal Justice - 2002
Texas Master Peace Officer Certificate
Texas Law Enforcement Instructor
Texas Firefighter Certificate
Texas Fire Investigator Certificate
Texas Fire Inspector Certificate
Texas Paramedic Certificate
National Association of Fire Investigators - member
Texas Municipal Police Association - member

EMPLOYMENT HISTORY

2008- Present	Rimkus Consulting Group, Inc.
2005 – 2011	City of Belton, Texas - Firefighter/Paramedic
2001-2004	City of Belton, Texas - Police Officer
2001, 2006-Present	City of Robison, Texas - Police Officer



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
921 Eastwind Drive, Suite 110
Westerville, OH 43081
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

March 3, 2017

Re: RCG File No:

LLV Number: 53602375
VMF Location: 9216194
Subject: 850 Twin Rivers Drive in Columbus, Ohio
Preliminary/Final Report

Dear

On January 6, 2017, a fire occurred involving LLV 9216194 on Interstate 270 in Columbus, Ohio. On January 10, 2017, Rimkus Consulting Group, Inc. was retained to examine LLV 9216194, VIN 1GBCS10E7L2304593.

On January 24, 2017 we conducted an examination of the LLV at the Columbus, Ohio vehicle maintenance facility located at 850 Twin Rivers Drive in Columbus, Ohio. In the course of our work, we examined the vehicle, excavated fire debris, documented with photos, and interviewed the maintenance manager. Our work to complete this assignment was performed by W. Timothy Spradlin, IAAI-CFI, Fire Consultant. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager. .

While performing our investigation we employed the scientific methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire & Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin was at and around the oil pan where a rod had dislodged and been thrown through creating a hole.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of a thrown rod through the oil pan which allowed ignitable engine fluids to be expelled onto the hot surface of the operating LLV and ignite.

Observations

Exterior Inspection:

We observed that the exterior of the LLV was severely damaged by fire and heat. The hood, windshield, and "A" posts had collapsed. The aluminum roof was consumed and collapsed over the driver compartment. The sliding doors were heat damaged and the glass was collapsed. There were fire patterns on the front grill and fenders indicating fire extension from the engine compartment. There were fire patterns on the exterior body sides which indicated that fire had extended from the engine compartment toward the rear of the vehicle. The rear overhead door to the cargo compartment had heat damaged and had collapsed into the interior. The rear tail light assemblies were melted and consumed by fire. The wheels and tires were intact with light heat damage to the rear tires.

Interior Inspection:

We observed the operator compartment had sustained severe fire damage with the majority of combustible materials consumed by fire. The dashboard and bulkhead between the engine compartment was completely consumed or collapsed. All electrical circuits were fire damaged with insulation melted and fractured at several locations. The cargo compartment also sustained severe fire damage. The interior aluminum walls were heat damaged, melted, and partially collapsed into the cargo area. An analysis of the observable fire patterns and damage within the operator compartment indicated that the fire extended into this area from the engine compartment. There was no physical evidence observed on the interior of the LLV that would have caused or contributed to the cause of the fire.

Engine Compartment Inspection:

The melted and disfigured aluminum hood was removed from the top of the engine block during our investigation. We observed that the engine compartment sustained severe fire damage with the consumption of all combustible components in the space. We observed that all aluminum components in the engine compartment were melted and collapsed. We observed that all electrical conductors were severely fire damaged with melted insulation and fractures in multiple locations. The battery was completely destroyed in the fire.

Undercarriage Inspection:

The vehicle was elevated with a tow truck and we examined the undercarriage of the vehicle. We observed a fracture with a hole in the left side of the oil pan. We observed the fire damage patterns on the adjacent exhaust system. The fuel lines were severely damaged by fire and fractured. We observed fire damage patterns extending from the lower side of the engine toward the rear of the vehicle. The LLV was mounted on a GM frame and was equipped with a GM fuel filter system.

Fuse Panel Inspection:

We examined the fuse panel. It was completely melted and destroyed by heat. We could not determine the status of the electrical fuses or systems.

Area of Fire Origin:

Based on our observations, it is our opinion the area of fire origin was the left side of the engine at the exhaust system downpipe. It is our opinion a catastrophic engine mechanical failure damaged the left side of the oil pan. Oil was lost and contacted the hot exhaust down pipe. The cause of the fire was hot surface ignition of ignitable liquids.

Contributing Factors:

While being operated, the engine threw a rod and caused a hole in the oil pan which allowed ignitable engine fluid to be expelled onto the hot surfaces of the operating engine of the LLV.

Evidence Collected:

No evidence was collected.

Interviews:

On January 24, 2017, we interviewed the supervisor of the Columbus vehicle maintenance facility. He stated the LLV is a 1990 model that has routine maintenance performed at the Columbus VMF. He said there were no major problems with the LLV prior to the fire. Mr. stated on the date of the fire, mail carrier was driving the LLV. She was on an express run, a short notice rush job to pick up a load of mail and get it back to downtown main post office as quickly as possible. He said the driver was "pushing the truck very hard". Mr. stated that Ms. was driving on the interstate at 70 miles per hour when she heard a bang noise in the engine. The truck engine continued to run but smoke started to extend from the engine compartment. Mr. stated that by the time Ms. stopped the LLV, she saw flames coming out of the left front wheel well. The fire grew

very rapidly spreading to the rear of the truck. Mr. stated the VMF mechanics had examined the engine and determined that a rod had broken, causing it to extend out of and fracture the oil pan.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no indications of recent service work or repairs that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Timothy Spradlin

W. Timothy Spradlin, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

March 3, 2017
RCG File No. 53602375

Photograph 1

Front of LLV with fire patterns extending from engine toward the rear.



Photograph 2

Left side of LLV with fire patterns extended from the engine compartment.



March 3, 2017
RCG File No. 53602375

Photograph 3

Underside of engine with heavy oil residue on the left side components.



Photograph 4

Left side of oil pan fractured with hole and oil residue.



March 3, 2017
RCG File No. 53602375

CVs



**WILLIAM TIMOTHY SPRADLIN, IAAI-CFI, CI, FIT, NAFI-CFEI
Fire Consultant**

Mr. Tim Spradlin has over 35 years' experience in firefighting, law enforcement, fire, arson and bombing investigation. His fire / explosion investigation work spans over 20 years of service, and he has three related college degrees. His career includes work as a full-time fire lieutenant, captain, deputy chief and fire chief in Xenia Township, Ohio. Mr. Spradlin also served as a reserve deputy sheriff with the Greene County Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He retired from 32 years public safety work as the Chief of the State of Ohio Fire Marshal's Fire – Explosion Investigation Bureau. From January 2008 until September 2014 Mr. Spradlin was the full-time chief fire / arson investigator for Ohio. He was also the curriculum manager / instructor for the Ohio Fire Academy fire investigation programs.

Mr. Spradlin also served in the United States Air Force, where he served 4 years active duty and 26 years reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant / First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the US Army in 2007 for combat meritorious service.

He currently serves as a police officer in the Village of Yellow Springs and as a volunteer fire training officer with the Xenia Township Fire Department in Ohio. Mr. Spradlin also teaches in the Clark State Community College fire programs and the Sinclair Community College Basic Police Officer Training Academy.

Mr. Spradlin is a certified fire investigator (CFI), fire investigation technician (FIT) and certified instructor (CI) by the International Association of Arson Investigators (IAAI). He is also a certified fire explosion investigator (CFEI) by the National Association of Fire Investigators (NAFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Bachelor of Science Degree in *Organizational Management* from Wilberforce University, Xenia, Ohio
Associates Degree in *Human Resource Management*, Air University CCAF, Gunter AFS, Alabama
Associates Degree in *Fire Science Technology*, Air University CCAF, Gunter AFS, Alabama
National Fire Academy *Arson Interview, Interrogation and Courtroom Testimony* course
National Fire Academy *Executive Analysis of Fire Operations in Emergency Management*
National Fire Academy *Executive Development* Program
National Fire Academy *Executive Planning* Program
Ohio Fire Academy *Basic Fire Investigation* and *Advanced Fire Investigation* programs
USAFR *Senior NCO Leadership Development Course*, Robins AFB, Georgia
Sinclair Community College Criminal Justice Academy, Dayton, Ohio

Member of the International Association of Arson Investigators (IAAI) and of the Ohio Chapter IAAI
Member of the National Association of Fire Investigators (NAFI)
Member of the National Society of Professional Insurance Investigators (NSPII)



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
921 Eastwind Drive, Suite 110
Westerville, OH 43081
(866) 240-0401 Telephone
(614) 948-0553 Facsimile

April 14, 2017

Re: RCG File No:

LLV Number: 53602486
VMF Location: 9216581
Subject: 11800 Merriman Road in Livonia, Michigan
Preliminary/Final Report

Dear

On March 13, 2017, a fire occurred in a US Postal Service vehicle on Newburgh Road near mile marker 7 in Livonia, Michigan. On March 23, 2017, Rimkus Consulting Group, Inc. was retained to examine the 1993 GMC LLV 9216581, VIN 1GBCS10EOL2304984. On March 27, 2017, we conducted a fire origin and cause examination on the vehicle at 11800 Merriman Road in Livonia, Michigan.

In the course of our work, we interviewed the vehicle maintenance staff and the carrier, examined the vehicle, examined maintenance records, and documented the fire damage with photographs. Our work to complete this assignment was performed by Fire Consultant W. Timothy Spradlin, IAAI-CFI. This report was technically reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. An analysis of the observable fire patterns and physical evidence indicated that the specific area of fire origin within the engine compartment was on the left side of the engine compartment.

3. The specific ignition sequence and cause of the fire could not be conclusively determined due to the severity of the damage and the lack of discernible physical evidence.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The exterior of the vehicle was in fair condition. The rear cargo area, both side doors, and all four tires were intact. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire. Exterior fire damage consisted of a broken windshield, discoloration and loss of paint to the engine hood, and body damage caused by firefighters during suppression activities.

Interior Inspection:

While examining the interior of the vehicle, the operator's compartment revealed severe fire damage while the cargo compartment sustained moderate smoke and heat damage. An analysis of the fire patterns in this area indicated that the fire extended into this area from the engine compartment and did not originate on the interior. The driver seat cushion and all combustibles were consumed. The aluminum engine compartment bulkhead wall and dash structure were totally consumed and had collapsed inside the cab. The electrical circuit insulation and heater vent hoses were consumed by fire. Based on our observations of the interior damage, it is our opinion the fire had extended from the engine compartment through the bulkhead wall.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated within the engine compartment. We observed severe fire damage to the engine compartment including all combustibles within the engine compartment. We were able to detect an acceptable level of oil on the dipstick. We also examined the transmission fluid level and detected an acceptable level of fluid on the dipstick. We were unable to examine the power steering fluid due to

the severe fire damage in the engine compartment. The battery and fuse panel suffered severe fire damage.

We observed fire and heat damage to the engine extending from the left rear section of the engine. The battery and power steering plastic caps to the right side of the engine were partially melted by heat. The top front radiator hose was blistered but intact. The power steering reservoir cap was consumed by heat at the left front side of the engine. The fan belts were heat damaged and broken. The aluminum bulkhead wall separating the cab was completely consumed and collapsed. The electrical circuits to the rear of the compartment were heavily fire damaged, collapsed and fractured by heat. The fuel filter at the left rear of the block was heavily fire damaged. The reinforced rubber return gas hose was consumed by fire; the supply side hose was blistered. The supply end of the hose was frayed and fractured at the metal pressure connection of the fuel filter. Based on our observations it is our opinion the fire damage patterns were a result of fire extension from the left rear section of the engine near the fuel filter.

Undercarriage Inspection:

This vehicle is mounted on a General Motors, S10 frame and the fuel filter was mounted underneath. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and the transmission did reveal possible leaking around the speedometer gear housing unit. There was no fire damage to the undercarriage. The VMF mechanic stated that the right motor mount appeared to be cracked.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained severe fire damage. We were unable to determine the status of the fuses.

Contributing Factors:

The LLV reportedly was being driven at the time of the fire. The carrier stated the vehicle had no power and was running rough. The vehicle was pulled to the side of the road. The carrier observed smoke and fire on the left side of the engine compartment.

A large quantity of oil was observed on the back side of the exhaust manifold.

The most probable cause for the fire was the ignition of leaking engine oil vapor by a competent ignition source. The competent ignition sources in the area of origin would have been the hot surfaces of an engine component. A potential contributing factor was a possible flammable fluid leak that atomized onto the hot surface of the engine.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment. The specific area of origin was at and around the left rear of the engine block near the fuel filter and the exhaust manifold.

Evidence Collected:

There was no evidence collected for laboratory examination.

Interviews:

On March 27, 2017 we conducted an interview with VMF staff and reviewed the vehicle maintenance records. The vehicle had no chronic problems. There were no recent repairs to the electrical or fuel systems. We conducted a telephone interview with the driver carrier. He stated that on the date of the fire, he had been operating the vehicle for approximately five hours and was returning to the post office. He stated all systems were operating normally. Mr. stated that suddenly the vehicle lost acceleration; the engine did not die but it would not accelerate. He said he pulled over to the side of the road and shut off the engine when smoke began coming out of the dash to the driver's left. He stated he exited the vehicle, called a supervisor and called 911, then salvaged some mail from the cargo area. Mr. stated that he observed the fire grow extending from the engine compartment, through the hood and bulkhead into the driver compartment before the fire department arrived.

Service Records:

A review of the provided service records for the involved LLV was conducted. The last repair work was replacement of the parking brake cable on February 24, 2017. There were no noted recent repairs or service that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

W. Timothy Spradlin

W. Timothy Spradlin, IAAI-CFI, NAFI-CVFI
Fire Consultant

David R. Meyers

David R. Meyers
Technical Fire Manager

Attachments: Photographs, CVs

April 14, 2017
RCG File No. 53602486

Photograph 1

Fire damage patterns indicating fire extension from engine compartment.



Photograph 2

Fire consumed the bulkhead panel and dash in the driver compartment.



Photograph 3

Fire damage and molten aluminum on top of the fuel filter.



Photograph 4

Fuel filter supply side hose fractured at the pressure fitting bottom side.



April 14, 2017
RCG File No. 53602486

CVs



**WILLIAM TIMOTHY SPRADLIN, IAAI-CFI, CI, FIT, NAFI-CFEI
Fire Consultant**

Mr. Tim Spradlin has over 35 years' experience in firefighting, law enforcement, fire, arson and bombing investigation. His fire / explosion investigation work spans over 20 years of service, and he has three related college degrees. His career includes work as a full-time fire lieutenant, captain, deputy chief and fire chief in Xenia Township, Ohio. Mr. Spradlin also served as a reserve deputy sheriff with the Greene County Sheriff's Office and was the training officer for the Greene County Fire Investigation Task Force. He retired from 32 years public safety work as the Chief of the State of Ohio Fire Marshal's Fire – Explosion Investigation Bureau. From January 2008 until September 2014 Mr. Spradlin was the full-time chief fire / arson investigator for Ohio. He was also the curriculum manager / instructor for the Ohio Fire Academy fire investigation programs.

Mr. Spradlin also served in the United States Air Force, where he served 4 years active duty and 26 years reserve in crash-fire-rescue, engineering and military police. He retired in 2008 as a Senior Master Sergeant / First Sergeant (E8). He is a combat veteran of two deployments to Operations Enduring Freedom and Iraqi Freedom, receiving the Bronze Star Medal from the US Army in 2007 for combat meritorious service.

He currently serves as a police officer in the Village of Yellow Springs and as a volunteer fire training officer with the Xenia Township Fire Department in Ohio. Mr. Spradlin also teaches in the Clark State Community College fire programs and the Sinclair Community College Basic Police Officer Training Academy.

Mr. Spradlin is a certified fire investigator (CFI), fire investigation technician (FIT) and certified instructor (CI) by the International Association of Arson Investigators (IAAI). He is also a certified fire explosion investigator (CFEI) by the National Association of Fire Investigators (NAFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Bachelor of Science Degree in *Organizational Management* from Wilberforce University, Xenia, Ohio
Associates Degree in *Human Resource Management*, Air University CCAF, Gunter AFS, Alabama
Associates Degree in *Fire Science Technology*, Air University CCAF, Gunter AFS, Alabama
National Fire Academy *Arson Interview, Interrogation and Courtroom Testimony* course
National Fire Academy *Executive Analysis of Fire Operations in Emergency Management*
National Fire Academy *Executive Development* Program
National Fire Academy *Executive Planning* Program
Ohio Fire Academy *Basic Fire Investigation* and *Advanced Fire Investigation* programs
USAFR *Senior NCO Leadership Development Course*, Robins AFB, Georgia
Sinclair Community College Criminal Justice Academy, Dayton, Ohio

Member of the International Association of Arson Investigators (IAAI) and of the Ohio Chapter IAAI
Member of the National Association of Fire Investigators (NAFI)
Member of the National Society of Professional Insurance Investigators (NSPII)



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
1661 East Camelback Road, Suite 124
Phoenix, AZ 85016
(866) 552-6758 Telephone
(602) 216-2201 Facsimile

August 8, 2016

Re: RCG File No: 01707589
LLV Number: 9216657
VMF Location: 4949 E. Van Buren Street in Phoenix, Arizona
Subject: Final Report

Rimkus Consulting Group, Inc. was requested on April 25, 2016, to examine a 1990 LLV 9216657, VIN 1GBCS10E9L2305129. The vehicle was involved in a fire on April 20, 2016, while being operated.

Work to complete this assignment was performed by Joseph M. Ellington, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI. In the course of our work, we examined the fire-damaged remains of the vehicle on April 29, 2016, at the USPS Vehicle Maintenance Facility at 4949 E. Van Buren Street in Phoenix, Arizona and reviewed documents associated with its recent repair.

While conducting our investigation, we employed the methodology of fire investigation using systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the involved LLV.
2. The specific area of origin was determined to be on the right driver side of the engine compartment, near the starter assembly.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of damage sustained by a recently replaced transmission cooler hose which allowed transmission fluid to be ignited by resistive heating and electrical arcing. The fire then spread within the engine compartment and to the rest of the vehicle.

4. The cause of the fire can be attributed to improper routing and securement of the recently replaced transmission cooler hose. Available evidence indicates this occurred during recent replacement of the transmission lines on the subject vehicle by Pep Boy's.

Observations

Exterior Inspection:

Exterior examination of the fire-damaged remains of the vehicle revealed the front grill section of the engine compartment (i.e. headlight assembly area, radiator, etc.) remained intact.

The remaining engine compartment panels and driver compartment exterior enclosure panels were consumed during the fire.

The left and right front tires were deflated as a result of the fire but were not consumed or severely damaged from the fire.

The engine compartment sustained severe fire damage which extended into the operator compartment and cargo area.

Interior Inspection:

The cargo compartment enclosure at the rear of the vehicle was the only section of the vehicle's interior that remained. Fire movement and intensity patterns indicated the fire entered this compartment from the front.

Engine Compartment Inspection:

The engine compartment sustained severe fire damage throughout. The most severe area of damage was determined to be on the right driver's side. The LLV was equipped with a GM fuel filter system. The engine compartment sustained severe damage and there was no physical evidence observed that the LLV was equipped with a High Energy Ignition (HEI) Distributor system.

Undercarriage Inspection:

The undercarriage of the fire-damaged remains of the vehicle could not be examined because of the lack of available resources at the examination site. The involved LLV was mounted on a GM frame.

Fuse Panel Inspection:

The fuse panel was severely fire-damaged and the size and status of individual fuses could not be determined from its remains.

Area of Fire Origin:

Fire damage, fire movement, and intensity patterns indicated the fire originated on the right driver side of the engine compartment, near the starter assembly, where the operator of the vehicle first observed flames.

Available evidence indicated that damage sustained by a recently replaced transmission cooler hose allowed transmission fluid to be ignited by resistive heating and electrical arcing. The fire then spread within the engine compartment and to the rest of the vehicle.

Potential Contributing Factors:

Examination of an exemplar vehicle of the same type as the subject vehicle at the examination facility, a 1990 LLV 9202281, VIN 1GBCS10E4K2308269, revealed that transmission cooler hoses on that vehicle were routed in a safe manner and secured with proper separation from the starter.

The cause of the fire can be attributed to improper routing and securement of the recently replaced transmission cooler hose. Available evidence indicates this occurred during recent replacement of the transmission lines on the subject vehicle by Pep Boy's.

Evidence Collected:

No physical evidence was collected from the fire-damaged remains of the vehicle. After the examination, the damaged transmission cooler lines were left intact on the vehicle. In the event that further evaluation of these components is needed, they will need to be removed.

Interview:

The operator of the vehicle, was unavailable to be interviewed at the time of our examination. However, records provided indicate the driver stopped the vehicle to take a bathroom break and on returning a few minutes later, noticed a small fire under the vehicle. The operator immediately notified management and the fire department who responded to extinguish the fire.

Service Records:

A review of the service records indicated that on April 20, 2016, the transmission cooler line was removed and replaced by Pep Boys in Yuma, Arizona. The improper installation and routing of the cooler line was a contributing factor in the ignition of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Joseph M. Ellington

Joseph M. Ellington, IAAI-CFI
Regional Fire Division Manager

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 8, 2016
RCG File No. 01707589

Photograph 1

Exterior view of front of vehicle.



Photograph 2

Exterior view of rear of vehicle from rear passenger side profile.



August 8, 2016
RCG File No. 01707589

Photograph 3

Exterior view of rear of vehicle from rear driver side profile.



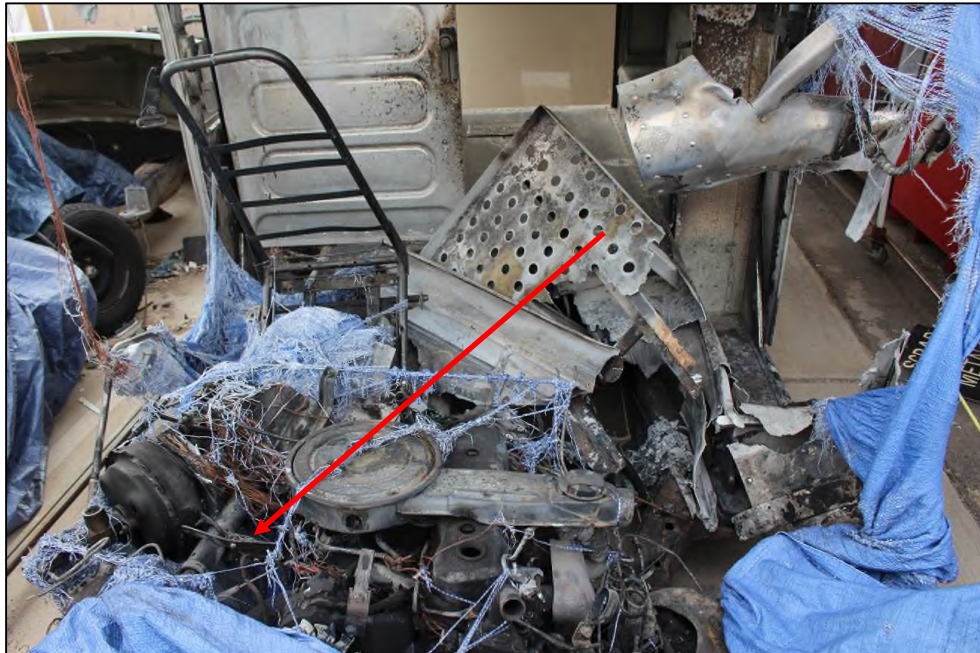
Photograph 4

Exterior view of rear of vehicle from rear driver side profile.



Photograph 5

Profile view of heavily fire-damaged engine compartment and components. Fire damage was comparatively heaviest to the right driver side of the vehicle (indicated by arrow) than the opposite side.



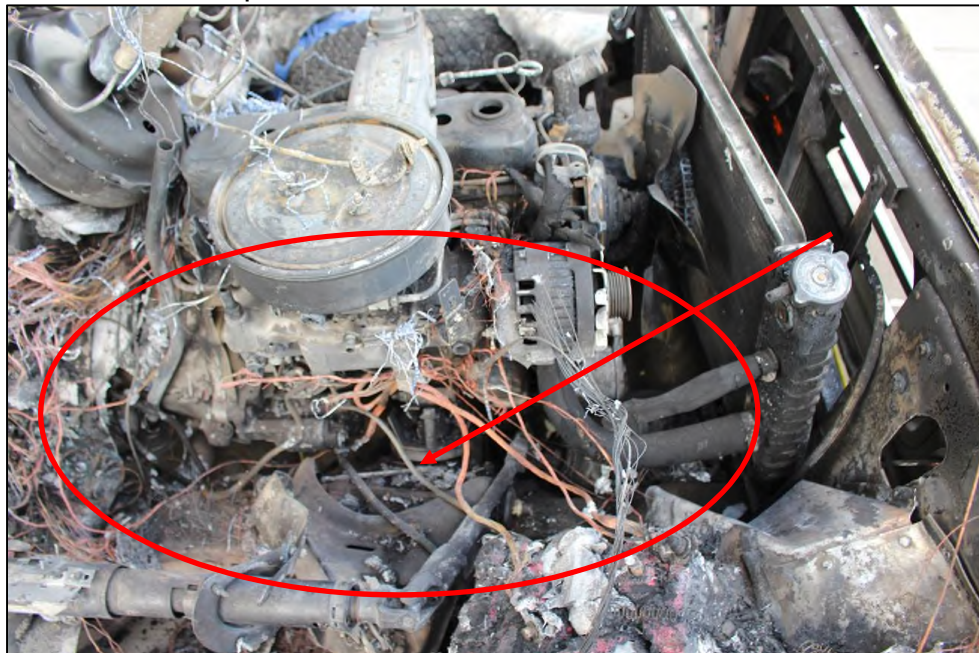
Photograph 6

Profile view of right driver side of engine compartment where fire originated.



Photograph 7

Right driver side profile view of engine compartment and area of fire origin. Arrow indicated hose that was replaced before the fire's occurrence.



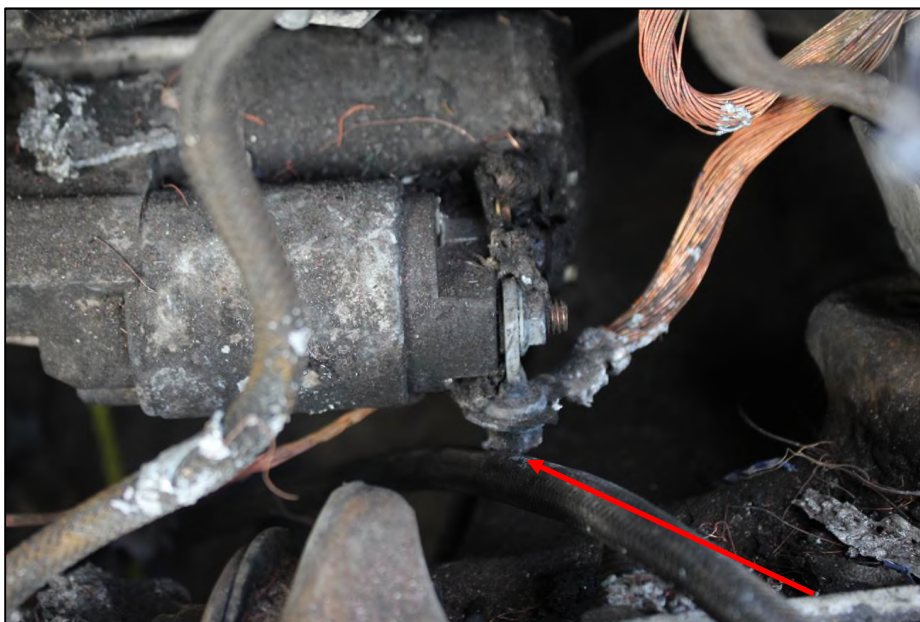
Photograph 8

View of transmission cooler hose at its point of connection to the transmission case on the right driver side of the vehicle. The hose was replaced by Pep Boy's prior to the fire's occurrence.



Photograph 9

Arc contact point of transmission cooler circulation hose with positive cable connection at starter on right driver side of vehicle.



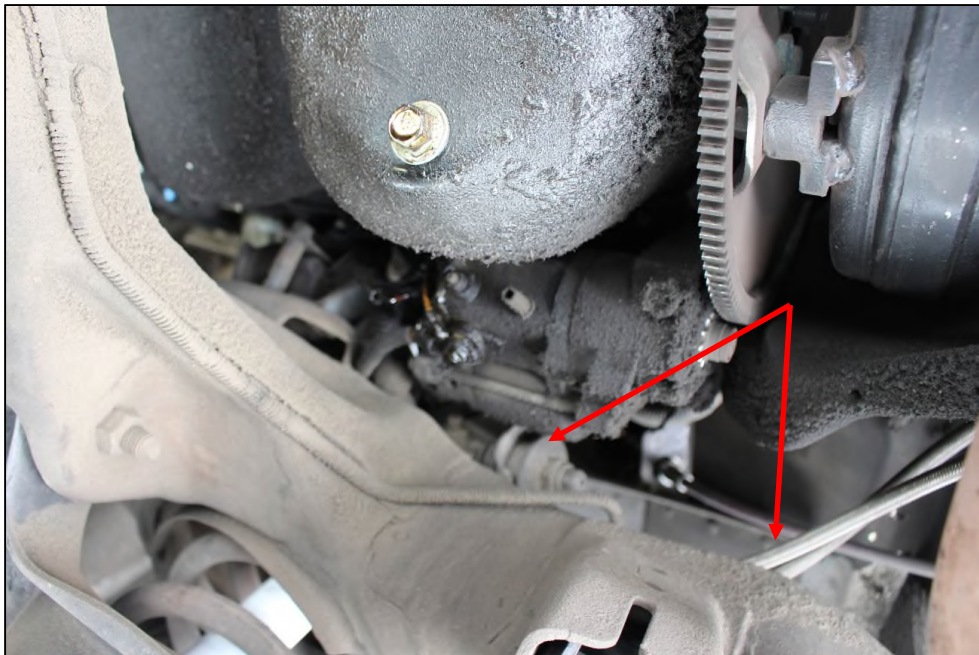
Photograph 10

Corresponding arc damage associated with steel braid of transmission cooler hose caused by contact with positive cable connection at starter.



Photograph 11

Routing of transmission cooler hoses on un-damaged exemplar vehicle show safe separation of hoses from starter accomplished by proper routing and securement of the hoses.



August 8, 2016
RCG File No. 01707589

CVs



**JOSEPH M. ELLINGTON, IAAI-CFI, NAFI-CFEI, CFII, & CVFI
REGIONAL FIRE DIVISION MANAGER**

Mr. Ellington has over 30 years of experience in the field of advanced technical investigations including a combination of field and management assignments in both small and large scale fire and explosion property losses, fire death and injury cases, product defects and liability cases, arson for fraud investigations, vehicle accident investigation and reconstruction, computer forensics, premises safety and security, and training & development solutions. Specific areas of expertise include primary responsibility for the direct management and supervision of cases where the origin, cause and responsibility of fires and explosions are at issue. These assignments involve residential, commercial, industrial, marine, off-shore production platforms, wind turbines, chemical and manufacturing plants and warehouses, heavy equipment, vehicles, product liability and injury/death related fires and explosions.

Consulting expertise includes evaluation of litigation related matters involving the case areas described above as well as explosions involving LPG, Natural gas, and high explosives, fire code and standards compliance, product and label warning evaluations, fire detection and response systems, computer fire modeling and simulation, investigation of fraud related fire incidents, computer forensics involving fire damaged systems, and vehicle accident investigation and reconstruction.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Post Graduate Studies – University of New Haven
Post Graduate Studies – Sam Houston State University
B.S. – Law Enforcement – Sam Houston State University
A.A.S. – Police Science – South Texas Junior College
National Association of Fire Investigators
International Association of Arson Investigators
International Association of Bomb Technicians & Investigators
National Fire Protection Association

EMPLOYMENT HISTORY

2005 – Present	Rimkus Consulting Group, Inc.
2001 – 2005	EFI Global, Inc.
1984 – 2000	Texas Investigative Consultants
1983 - 1983	Hicks & Sanchez Fire Investigations
1980 – 1982	Heliflight Systems
1976 – 1980	North Harris College
1971 – 1976	Texas Dept. of Public Safety
1969 – 1971	United States Army



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
609 South Kelly, Suite C-1
Edmond, OK 73003
(888) 611-7770 Telephone
(405) 340-8513 Facsimile

Certificate of Authorization No. 3201
Certification Expiration Date June 30, 2019

August 16, 2017

Re: RCG File No:

	22804590
LLV Number:	9217333
VMF Location:	4029 W. Reno in Oklahoma City, Oklahoma
Subject:	Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was requested on July 13, 2017, to investigate the origin and cause of a fire involving a 1990 GMC frame LLV mail vehicle, identified as LLV 9217333 that reportedly occurred previously on July 7, 2017. The fire was reported at 8:00 am on July 7, 2017, at 129 Gray Street in Norman, Oklahoma. The fire department did not respond because the fire was small and extinguished onsite with a fire extinguisher. Our investigation took place at the Vehicle Maintenance Facility located at 4029 W. Reno in Oklahoma City, Oklahoma.

In the course of our investigation we interviewed VMF Manager, examined and documented the fire-damaged LLV at USPS VFM in Oklahoma City, Oklahoma. A review of the maintenance records was completed. Multiple attempts to contact Supervisor were conducted with no return calls. The contact could be made with the carrier after multiple attempts. Work to complete the request was assigned to Fire Consultant Gary L. Cochran, IAAI-CFI. A technical Review of this report was completed by Technical Fire Manager David R. Meyers, IAAI-CFI.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 – "Guide for Fire & Explosion Investigations".

Conclusions

1. The fire was determined to have originated in the operator's compartment of the involved LLV.
2. The specific area of fire origin was determined to be at the ignition switch positioned in the right side of the dashboard.
3. The specific ignition sequence and cause of the fire was determined to be the direct result of a failure of the ignition switch within the steering column which heated and ignited surrounding combustible material.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side.

The rear cargo area, both side doors, and all four tires were intact. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size, and manufacturer. There was no evidence to indicate that the brakes, wheel assembly, or axles had failed. The fuel cap was in place and secured. All doors were observed in working order at the time of the fire.

Examination of the exterior of the vehicle revealed no fire damage.

Interior Inspection:

Examination of the interior revealed that both the operator cab and mail storage were undamaged. The only fire damage was on the topside of the steering column within a wiring harness that fed wires to the ignition switch.

Engine Compartment Inspection:

The engine compartment was examined. No fire or heat damage was observed. The fuel filter was intact and located along the rear of the engine near the mail side of the transmission. The fuel system was examined and found to be intact and observed with no fire damage. The fuel filter was observed with no fire damage. The fuel system was the GM model. The battery for the vehicle was located at the front driver's side of the engine compartment and had no fire damage. The engine oil and transmission fluid were examined and observed to be within their normal operating range.

An examination of the engine block was conducted. No fire damage was observed to the engine block. No internal failures of the engine were observed.

Undercarriage Inspection:

Examination of the undercarriage revealed no damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact.

Fuse Panel Inspection:

Examination of the fuse panel and fuses revealed no fire damage. No fuses had been tripped or blown.

Area of Fire Origin:

Examination of the area of origin, located within the ignition switch on top of the steering column, revealed a small area of fire damage to the switch. Our examination of the wiring revealed a single wire (hot wire from battery) had been severely damaged and revealed adverse electrical activity on the spade connector of the wire. We removed the ignition switch from the steering column and observed fire damage to the switch in the area where the spade connector connected to a metal connector attached to the ignition switch.

Contributing Factors:

Age of the switch may have contributed to the failure of the ignition switch.

Interviews:

It was reported to us that the carrier was operating the vehicle and observed "smoke" within the area of the steering column. He reported that he notified the supervisor, and a fire extinguisher was utilized to extinguish the fire. He reported that he had no issues with the vehicle prior to the fire.

Evidence Collected:

The ignition switch and portions of the wiring were collected and sent to the Charlotte office for examination by a forensic consultant.

Lab Exam:

A lab examination of the ignition switch was conducted by Forensic Consultant Mark H. Nelson, P.E. on August 15, 2017. The switch was observed with resistance heating at

the wire terminal on the switch. The wire terminal spade connector was observed with mechanical damage to the connection terminal. No other failures were observed.

Service Records:

A review of the provided service records for the involved LLV was conducted. The last scheduled service was completed on June 9, 2017. After a review of the service records, it was determined that several maintenance issues had occurred on the vehicle over the previous year prior to the fire in the area the fire originated. However, based on this information, maintenance performed on the vehicle may not have contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,

RIMKUS CONSULTING GROUP, INC.

Gary L. Cochran

Gary L. Cochran, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

August 16, 2017
RCG File No. 22804590

Photograph 1

View of front end, no visible fire damage.



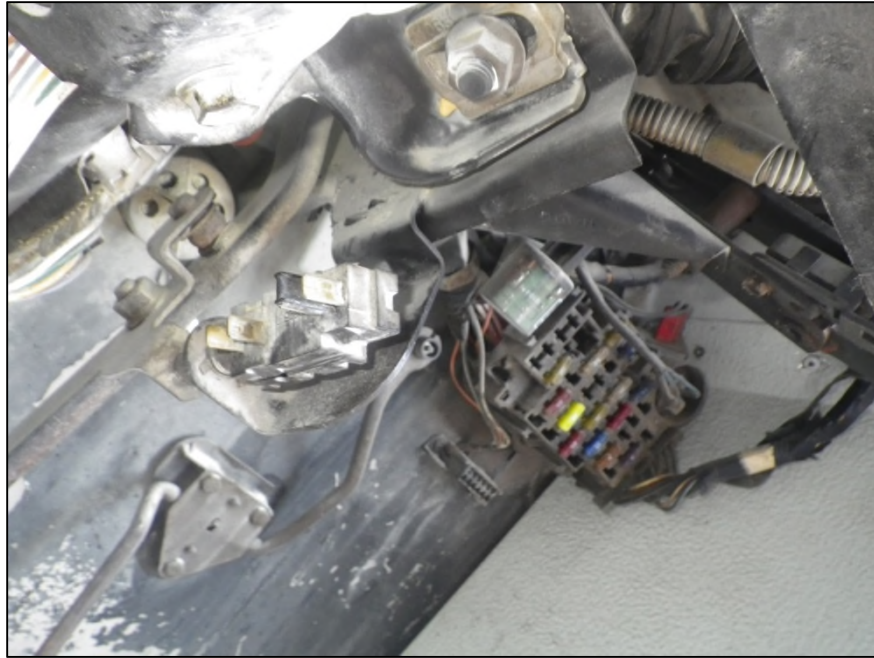
Photograph 2

View of no fire damage to engine compartment.



Photograph 3

View of undamaged fuse panel and fire extinguisher powder around steering column.



Photograph 4

View of fire damaged ignition switch and wiring, on top of steering column.



Photograph 5

View of fire damage where connector shorted out on ignition switch.



Photograph 6

View of shorted connector and spade of ignition switch.



August 16, 2017
RCG File No. 22804590

Photograph 7
View of the steering column.

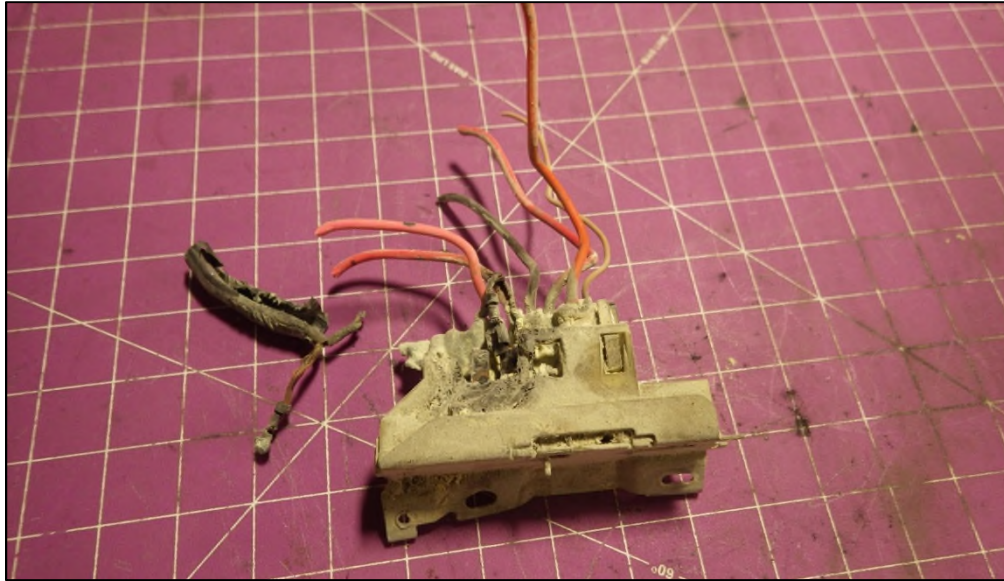


Photograph 8
View of ignition packaged for transfer to Charlotte Office for examination.



Photograph 9

Ignition Switch examined in the lab.



Photograph 10

Mechanical damage to the wire terminal connector.



August 16, 2017
RCG File No. 22804590

CVs



**GARY L. COCHRAN, IAAI-CFI, NAFI-CFEI & CVFI
FIRE CONSULTANT**

Mr. Cochran has more than 30 years of experience in fire service. He has actively served as a Fire Investigator for two separate municipalities, and has served as an active member of the Tarrant County Fire/Arson Investigator's Association and most recently with the Grapevine Fire Department, Texas, as the Fire Code Enforcement Officer and Fire Investigator. He was also the Fire Code Enforcement Officer and Fire Investigator for the Town of Westlake, Texas. Mr. Cochran has extensive training in fire and criminal investigations, as well as hazardous material, nuclear, chemical, and biological and EMS incidents. He is certified through the International Association of Arson Investigators as a Certified Fire Investigator (IAAI-CFI) as well as the National Association of Fire Investigator as a Certified Fire and Explosion Investigator (NAFI-CFEI) and Certified Vehicle Fire Investigator (NAFI-CVFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Fire Protection Technology, Tarrant County College
Fire Service Administration, Weatherford College
Occupational Safety & Health, A.A.S., Columbia Southern University
International Association of Arson Investigators (IAAI), Texas Chapter, 2007 - Present
International Association of Arson Investigators (IAAI), 2007 - Present
International Association of Fire Fighters (IAFF)
National Association of Fire Investigators (NAFI), 2005 - Present
Texas Firefighters Association, 1987 - Present
Tarrant County Fire and Arson Investigators Association (TCFAIA), 2005 - Present
North Texas Fire Investigators Association (NTFIA), 2008 - Present

SPECIALIZED EDUCATION

Complex Arson Investigation Techniques for the Insurance Industry (IAAI) 2014
A.A.S. - Occupational Safety & Health, Columbia Southern University 2012
Texas IAAI Arson Conference, Austin, TX 2012
Pate Hands-On Vehicle Fires – Tested 2012
CVFI (NAFI) - Tested 2012
Texas IAAI Arson Conference, Austin, TX 2011
NFA – Forensic Evidence Collection, Emmitsburg, MD 2011
South Texas Arson Conference, South Padre, TX 2010
NFA – Fire/Arson Origin and Cause Investigations, Emmitsburg, MD 2010
NFA 25–Inspections, Testing and Maintenance of Water Based Fire Protection Systems, Houston, TX 2010
NFPA 72 - Inspections Testing and Maintenance of Fire Alarms, Houston, TX 2010
East Texas Arson Seminar, Longview, TX 2009
Certified Fire Investigator (IAAI-CFI) Tested 2009
Legal Aspect of Fire Investigations, North Richland Hills, TX 2009
East Texas Arson Seminar, Longview, TX 2008
NFA – Developing Fire & Life Safety Strategies, Emmitsburg, MD 2008
NFA – Plans review for Inspectors, Emmitsburg, MD 2007
TCLEOSE Basic Police Officer 2007
Intermediate Fire/Arson Investigator 2007
Intermediate Fire Inspector 2007
IAAI Texas Chapter Arson Seminar, Austin, TX 2007
TEEX – Courtroom Preparation for First Responders, Benbrook, TX 2006
Certified Fire and Explosion Investigator (NAFI-CFEI) Tested 2006
Advanced Firefighter 2005
Juvenile Fire Setter Intervention Specialist I & II Tested 2005
IAAI Texas Chapter Arson Seminar, Austin, TX 2005
Hazardous Material Technician School, Dallas, TX 2000
Paramedic School, Hurst, TX 1985
Basic Firefighter School, Bedford, TX 1983



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
2030 Powers Ferry Road, Suite 224
Atlanta, GA 30339
(770) 436-9399 Telephone
(770) 438-2189 Facsimile

May 4, 2016

Re: RCG File No: 50805602
LLV Number: 9217788
VMF Location: 3900 Crown Road in Atlanta, Georgia
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 9217788, VIN 1GBCS10E8L2306160. The vehicle was examined at the USPS Atlanta Vehicle Maintenance Facility located at 3900 Crown Road in Atlanta, Georgia. The fire incident reportedly occurred at 5782 Giles Road in Lithonia, Georgia on January 6, 2016.

In the course of our work, we examined and documented the fire damaged vehicle on February 5, 2016. Our work to complete this assignment was performed by Fire Consultant Gregory M. Cloer, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. A thorough examination of the involved LLV indicated that the fire originated in the engine compartment.
2. The specific area of fire origin was determined to be in and around the carburetor of the operating LLV.

3. The specific ignition sequence and cause of the fire was a direct result of vaporized unburned gasoline being ignited at the time of an engine backfire. No other viable ignition sources were found.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side. The roof above the passenger compartment and front sides of the passenger compartment had been consumed during the fire event. The cargo compartment walls, roof, and rear door remained intact.

Interior Inspection:

Examination of the interior of the vehicle revealed that most of the combustible materials in the passenger compartment and the bulkhead had been consumed during the fire event. The rear cargo compartment remained intact.

Engine Compartment Inspection:

The engine compartment was examined. The most severe fire damage was observed in the engine compartment at the top surfaces of the engine. The battery had sustained severe fire damage. The electrical conductors in the engine compartment were examined. There was no physical evidence of adverse electrical activity noted on the electrical conductors within the engine compartment.

The engine oil and transmission fluid were examined and observed to be within their normal operating range. The fuel filter system was an AC Delco model.

The air intake system was examined. The air intake hose had been consumed during the fire event. Most of the air filter was consumed by the fire and the top surfaces of the carburetor had sustained severe fire damage. The inside of the air filter cover had also sustained severe fire damage. This type of damage is consistent with fire resulting from the engine backfiring and igniting unburned vaporized gasoline.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire patterns extending from underneath the vehicle. The LLV was mounted on a GM frame and had sustained some damage to the left frame rail below the engine. This damage was consistent with the fuel filter and fuel lines failing during the fire event. The engine fuel lines were located along the left

side of the engine. The fuel filter was located on the left side at the rear of the engine. The fuel tank and fuel lines along the frame rail did not show any signs of failure. The exhaust system was intact and the transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it sustained severe fire damage. Due to the damage, the status of the fuses could not be determined.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence that the fire originated in the engine compartment. The specific area of origin was at or within the carburetor.

Contributing Factors:

It was reported that the vehicle was not running properly and that it had backfired prior to the fire event.

Interviews:

No interviews were conducted. Interviews were attempted on multiple occasions prior to the publishing of this report with negative responses from the operator.

Service Records:

A review of the provided service records indicated that the last PMI was completed by the Atlanta VMF on December 29, 2015, prior to the fire. The vehicle was serviced multiple times throughout 2015 for failure to start, cutting off, and failure to restart. The listed mileage at the last PMI was 140,707.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gregory M. Cloer

Gregory M. Cloer, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

May 4, 2016
RCG File No. 50805602

Photograph 1

View of the front exterior.



Photograph 2

View of the right exterior.



May 4, 2016
RCG File No. 50805602

Photograph 3

View of the rear exterior.



Photograph 4

View of the left exterior.



May 4, 2016
RCG File No. 50805602

Photograph 5

View of the cargo compartment interior.



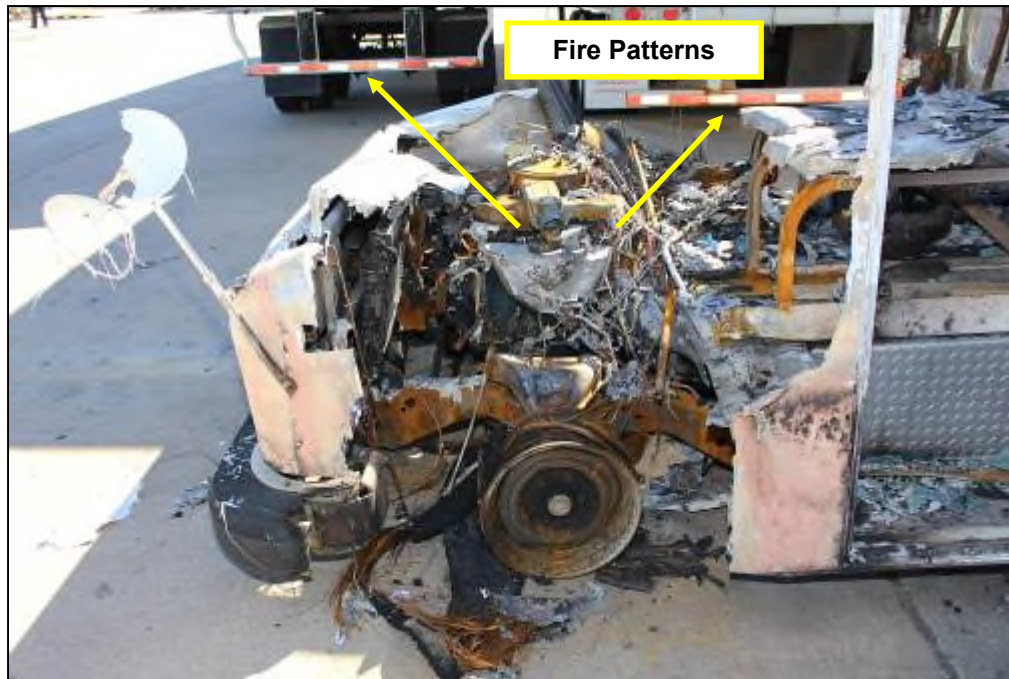
Photograph 6

View of the passenger compartment.



Photograph 7

View of the engine compartment.

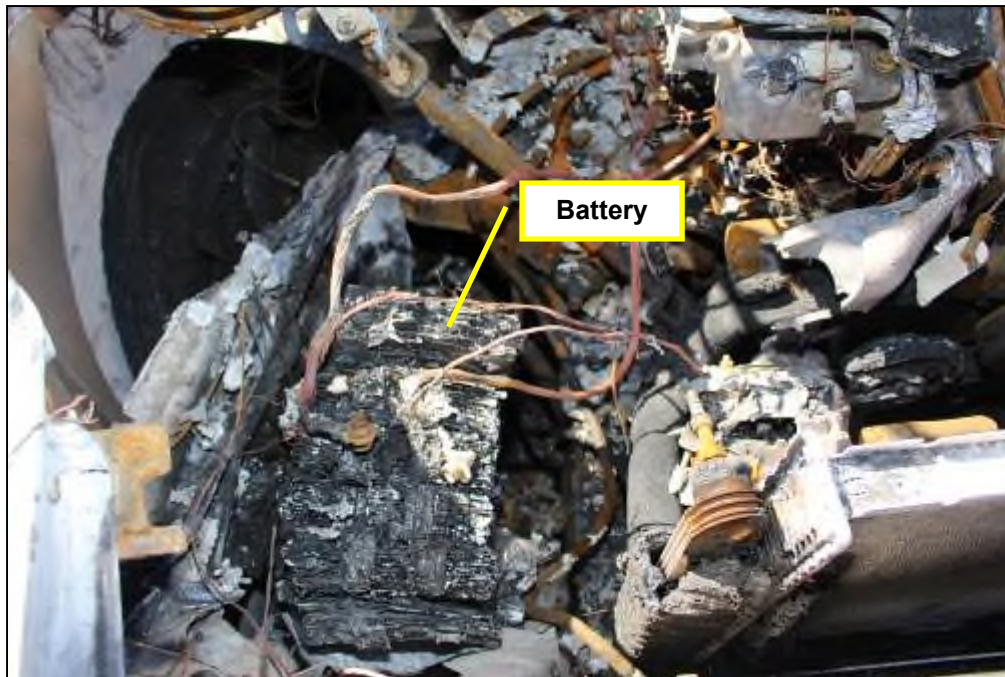


Photograph 8

View of the engine.



Photograph 9
View of the battery.



Photograph 10
View of the undercarriage and fire damage to the left frame rail.



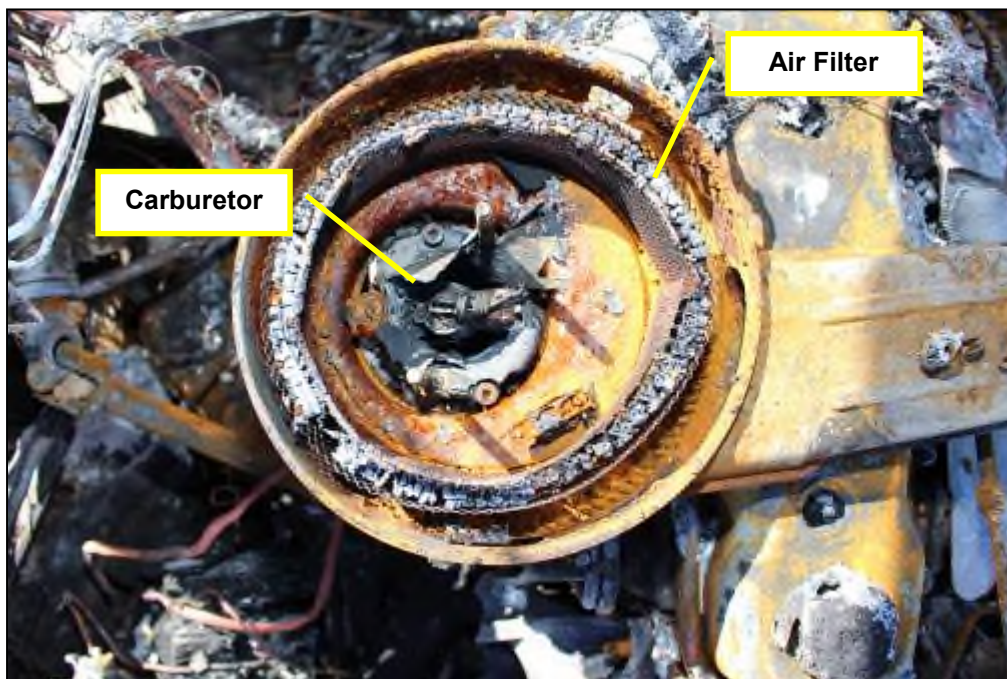
Photograph 11

View of the conductors to the fuse panel.



Photograph 12

View of the burned remains of the air filter and the fire-damaged carburetor.



May 4, 2016
RCG File No. 50805602

Photograph 13

View of the interior surface of the air filter cover.



May 4, 2016
RCG File No. 50805602

CVs



**GREGORY M. CLOER, C.F.I.
FIRE CONSULTANT**

Mr. Cloer is a Certified Fire Investigator (C.F.I.) by Georgia P.O.S.T., NPQ, N.F.A. and IAAI for fire/arson investigation, and is certified by Georgia P.O.S.T. as a basic peace officer. Mr. Cloer has also served as an EMT and as a paramedic.

Mr. Cloer has an extensive background in firefighting & prevention in which he served 28 years with Cobb County Fire and Emergency Services, 14 of those years as a fire/arson investigator. Mr. Cloer's experience encompasses investigation of fires, explosions, bombings, and all related crimes to ensure the origin and cause of the incidents were properly documented. Mr. Cloer has testified as an expert in criminal court related to fire investigations he has performed. His professional experience includes, but is not limited to, residential, commercial, and vehicle fire cause and origin investigations, explosion investigation, surveillance, and the collection and securing of evidence.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certification, P.O.S.T. Basic and Advanced Arson Investigation (Currently Fire Investigator I and II)
Certification, P.O.S.T. Basic Peace Officer
N.F.A. Fire/Arson Investigation
P.O.S.T. Arson Investigator
IAAI-CFI
NPQ Certified Fire Investigator
NPQ Fire Instructor

TRAINING/CERTIFICATES

Certified Fire Investigator • Fire Instructor • Peace Officer • EMT • Paramedic • Advanced Fire Investigator • Advanced Fire Cause & Origin Expert Witness

EMPLOYMENT HISTORY

2015 – Present	Rimkus Consulting Group, Inc.
1986 – 2015	Cobb County Fire and Emergency Services

DETAILED PROFESSIONAL EXPERIENCE:

RIMKUS CONSULTING GROUP, INC.

2015 - PRESENT

Fire Consultant

Conduct fire, arson, and explosive investigations including residential, commercial, and vehicular losses for clients. Collect and preserve evidence ensuring a precise chain of custody. Conduct interviews with victims, property owners, witnesses, investigators, and pertinent third party organizations. Photograph scenes and prepare detailed written investigative reports as to the conclusions and opinions of the subject loss. Testify in related depositions and trials.



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
Rockwood Four Office Center
25 Rockwood Place, Suite 200
Englewood, New Jersey 07631
Telephone: (201) 368-8551

Certificate of Authorization No. 24GA28127700
Certification Expiration Date August 31, 2020

July 17, 2019

Re: RCG File No: 100006047
LLV Number: 1264536
VMF Location: 450 West Avenue Stamford, Connecticut
Subject: Preliminary/Final Report

Dear ,

On June 11, 2019, a fire involving US Postal Service vehicle LLV 1264536 reportedly occurred while the vehicle was in the parking lot of the US Postal Service located at 357 Commerce Drive in Fairfield, Connecticut. LLV 1264536 was examined at the VMF located at 450 West Avenue in Stamford, Connecticut.

Rimkus Consulting Group, Inc. was retained to examine LLV 1264536, VIN 1GBCS10AIN2902579 to determine the cause of the fire. During our investigation, we conducted an examination of the fire damaged LLV and documented the vehicle with photographs. In the course of our work, the vehicle examination was conducted by Fire Consultant Jeffrey Wilson, IAAI-CFI, on June 19, 2019. This report and case was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using the systematic approach as recommended in the current edition of the National Fire Protection Association, N.F.P.A. 921 - "Guide for Fire and Explosion Investigations" and N.F.P.A. 1033 - "Standard for "Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment of the involved LLV.
2. The specific area of origin could not be conclusively identified at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the severe fire damage to the engine compartment and the lack of remaining physical evidence for examination.
4. We could not eliminate the possibility of a leak in the fuel injector throttle body and the atomized gasoline vapor coming in contact with a competent ignition source, in the immediate vicinity of, or within, the air filter canister.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the mail side. The vehicle sustained severe damage to the front half of the vehicle. The windshield was consumed. Both of the front tires were observed to be completely damaged and both rear tires were undamaged. There was no evidence to indicate that the LLV had recently been involved in a collision. At the time of the exam, all of the LLV tires were found to be of the same make, size and manufacturer. There was no evidence to indicate that the brakes, wheel assemblies, or axles had failed. The fuel cap was in place and secured.

Interior Inspection:

The cargo area sustained smoke damage throughout. The driver's compartment sustained severe fire and heat damage. The combustible material of the driver's seat had been consumed. The top portion of the mail rack along the left side had been consumed. The steering column had collapsed. The front bulkhead had been consumed. The entire dashboard, wiring and wiring harness were completely consumed and could not be examined.

Engine Compartment Inspection:

The engine compartment had sustained significant direct fire and heat damage with the combustible components having been completely consumed. The metal components in the engine compartment had sustained a greater degree of fire and heat exposure on the mail side as compared to the driver's side of the vehicle. There were no visible electrical arcs or failures identified that could have been causative of this fire. The vehicle was equipped with a 2.2L four-cylinder engine. The vehicle was also equipped with a fuel injected throttle body and standard electronic ignition.

The brake booster positioned on the right rear bulkhead sustained fire and heat damage and had become detached from the bulkhead. The brake fluid reservoir had been consumed. The alternator sustained severe fire and heat damage. The insulation had been consumed from the conductors to the alternator. The main conductor was secure with no evidence of adverse electrical activity.

The radiator was intact. The air breather was in place, but the air filter had been consumed. The distributor sustained fire and heat damage.

The brake lines positioned on the left side of the engine sustained fire and heat damage. The exhaust manifold displayed severe heat damage.

Undercarriage Inspection:

We were unable to do a complete undercarriage examination of the vehicle for safety reasons. Loose components presented a drop hazard. From the areas of the undercarriage, we were able to examine the fire damage and it was consistent with a fire originating on the left front of the engine compartment.

Fuse Panel Inspection:

We were unable to examine the fuse panel as it had sustained severe fire damage and mass loss to the panel and all of the fuses. As a result of the fire damage and mass loss, we were not able to determine if any fuses were open or blown.

Area of Fire Origin:

The area of origin was the engine compartment.

Potential Contributing Factors:

We could not eliminate the possibility of a leak in the fuel injector throttle body and the atomized gasoline vapor coming in contact with a competent ignition source, in the immediate vicinity of, or within, the air filter canister.

Evidence Collected:

No evidence was collected.

Interviews:

The LLV reportedly was at 357 Commerce Drive in Fairfield, Connecticut. The carrier stated that she attempted to start the LLV three separate times and was unable to do so. She then exited the vehicle and she went to the rear cargo area. After moving some mail around, she then observed the driver's compartment filling up with smoke and when she looked to the side she could see fire in the engine area. The fire department responded and extinguished the fire.

Service Records:

A review of the provided service records for the involved LLV was conducted. There were no noted recent repairs or services that would appear to have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Jeffrey Wilson

Jeffrey Wilson, IAAI-CFI
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, Curriculum Vitae

July 17, 2019
Rimkus File No. 100006047

Photograph 1
USPS LLV 1264536.



Photograph 2
Mail side of engine compartment.



Photograph 3

Mail side of engine compartment, close-up.



Photograph 4

Carburetor.



Curriculum Vitae



Jeffrey Wilson, CFI, CFEI

Fire Consultant
Fire Division

Background

Mr. Wilson holds a B.S. degree in Fire Science and is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire & Explosion Investigator (NAFI-CFEI) with the National Association of Fire Investigators, a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard) and a New York State Fire Investigator. He is also Licensed Private Investigator in New York, New Jersey, Connecticut and Massachusetts.

His professional career includes 20 years of experience with the New Rochelle Police Department. He was promoted to the rank of Detective in 1995 and was later assigned to major case investigations in 2005 which included among other investigations, arson. He obtained certification as a New York State Fire Investigator in 2005 and was then appointed to the Westchester County Cause and Origin team at that time, which he continues to serve on today. In addition to his law enforcement career, Mr. Wilson has over 30 years as a volunteer firefighter and obtained the rank of Fire Captain.

He has investigated and determined the origin and cause of several hundred fires to include commercial structures, residential structures, vehicles and wild land. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Wilson has testified on several occasions involving the investigation of fires in New York.

Contact Information

(551)250-3878

jwilson@rimkus.com

25 Rockwood Place, Suite
200
Englewood, NJ 07631



Rimkus Consulting Group, Inc.
1431 Greenway Drive, Suite 900
Irving, TX 75038
(877) 271-1168 Telephone
(972) 518-0011 Facsimile

Certificate of Authorization No. F-1545
Certification Expiration Date September 30, 2017

November 4, 2016

Re: RCG File No:

LLV Number: 02214116
VMF Location: 2205475
Subject: 200 North Texas Avenue in Odessa, Texas
Preliminary/Final Report

Dear

Rimkus Consulting Group, Inc. was retained to examine the vehicle fire loss involving USPS LLV 2205475, with no identifiable VIN due to fire damage that occurred at Cloverdale Road and Fairgrounds Road in Midland, Texas, on October 15, 2016. In the course of our work, we examined and documented the fire-damaged vehicle and interviewed lead technician at the Odessa VMF Shop on October 26, 2016.

The examination of the vehicle took place at the USPS Vehicle Maintenance Facility located at 200 North Texas Avenue in Odessa, Texas. Our work to complete this assignment was performed by Fire Consultant Gary L. Cochran, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, IAAI-CFI, Technical Fire Manager.

During our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigation.

Conclusions

1. The fire was determined to have originated in the engine compartment of the involved LLV.
2. The specific area of fire origin within the engine compartment was determined to be at and around the oil pan on the underside of the engine.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of mechanical damage within the engine which caused a hole in the oil pan and ignition of the oil on the hot surface of the operating engine.
4. The day prior to the fire, the LLV had been inspected by a service technician who determined that the LLV had major engine problems and instructed the postal supervisor to take the vehicle out of service. The vehicle was not taken out of service and returned to the route the next day when the subsequent fire occurred.

Observations

Exterior Inspection:

Exterior examination of the vehicle revealed severe fire damage to the engine and operator's compartments, and moderate to severe fire damage to the cargo compartment. An analysis of the exterior fire patterns indicate that the fire originated in the engine compartment of the involved LLV.

Interior Inspection:

Interior examination of the involved LLV included the operator and mail compartments. The interior sustained severe fire damage.

Engine Compartment Inspection:

Burn pattern analysis and an examination of the remaining physical evidence within the engine compartment revealed that the fire originated on the underside of the engine in the area of the oil pan. We observed severe fire damage to the engine compartment, including all combustibles within the engine compartment. We examined the oil level, and observed a very minimal amount of oil on the dipstick. We examined the transmission fluid, which revealed transmission fluid on the dipstick.

We examined the electrical system of the vehicle and noted no observable adverse electrical activity within the electrical system. We examined the fire-damaged wiring harnesses within the vehicle and observed no adverse electrical activity. We observed that the battery had been severely damaged as a result of the fire. We observed the battery cables had been disconnected from the battery as a result of the fire. The vehicle was equipped with a GM fuel filter system.

Undercarriage Inspection:

Examination of the undercarriage revealed evidence of fire damage in the areas of the bottom side of the engine, as well as the sides of the engine. The involved vehicle was mounted on an S frame. In the area of origin, which was on the mail holder side of the

engine in the oil pan area, an approximate 1" x 1" hole was observed, which indicated that a rod, or other engine components, had possibly exited out the side of the oil pan, causing oil to spill from the hole and onto the hot engine and hot exhaust system within close proximity of the hole.

Fuse Panel Inspection:

We were unable to examine the fuse panel due to extensive fire damage.

Area of Fire Origin:

The area of origin was determined to have been on the operator side of the engine compartment near the oil pan area. There was physical evidence of an approximate 1" x 1" size hole in the operator side of the oil pan.

Potential Contributing Factors:

During our examination, we determined that the oil pan developed an approximately 1" x 1" size hole, possibly from an engine rod or other engine component exiting through the side of the oil pan, causing oil to spray onto the hot engine surface and / or hot exhaust system, causing the oil to ignite. Based on interviews, this could have been avoided by taking the LLV out of service as instructed by the VMF technician.

Evidence Collected:

No evidence was collected during our inspection.

Interviews:

We interviewed lead technician at Odessa, Texas, VFM on October 26, 2016, during our inspection of the vehicle. Mr. stated that he had conducted a service call at the main Midland facility on Friday, October 14, 2016, on the subject vehicle for a knocking in the motor. During his service call, he stated there was very little oil in the engine. He added three quarts of oil to the engine, started the vehicle to check for engine pressure, and determined the knocking was worse. He immediately shut the vehicle off and advised Rosslyn at the supervisor desk not to use the vehicle because there was a motor issue.

On October 15, 2016, the vehicle was placed back in service and used on a rural route when the fire occurred.

Mr. stated the carrier said while he was driving, he heard a loud pop in the engine and then started seeing smoke from the front of the vehicle. He pulled the vehicle over, stopped, exited the vehicle, and immediately saw fire, and called 9-1-1.

Service Records:

A review of the service records confirmed that on the day before the fire, the LLV was inspected by a technician. Due to a “knocking” noise in the engine compartment, the technician advised the postal supervisor to take the LLV out of service for a major engine repair.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

Gary L. Cochran

Gary L. Cochran, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

November 4, 2016
RCG File No. 02214116

Photograph 1

Front view of fire-damaged vehicle.



Photograph 2

View of mail holder side of vehicle.



November 4, 2016
RCG File No. 02214116

Photograph 3

View of underside of vehicle. Arrow indicates area of hole in oil pan.



Photograph 4

View of hole in oil pan.



November 4, 2016
RCG File No. 02214116

CVs



**GARY L. COCHRAN, IAAI-CFI, NAFI-CFEI & CVFI
FIRE CONSULTANT**

Mr. Cochran has more than 30 years of experience in fire service. He has actively served as a Fire Investigator for two separate municipalities, and has served as an active member of the Tarrant County Fire/Arson Investigator's Association and most recently with the Grapevine Fire Department, Texas, as the Fire Code Enforcement Officer and Fire Investigator. He was also the Fire Code Enforcement Officer and Fire Investigator for the Town of Westlake, Texas. Mr. Cochran has extensive training in fire and criminal investigations, as well as hazardous material, nuclear, chemical, and biological and EMS incidents. He is certified through the International Association of Arson Investigators as a Certified Fire Investigator (IAAI-CFI) as well as the National Association of Fire Investigator as a Certified Fire and Explosion Investigator (NAFI-CFEI) and Certified Vehicle Fire Investigator (NAFI-CVFI).

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Fire Protection Technology, Tarrant County College
Fire Service Administration, Weatherford College
Occupational Safety & Health, A.A.S., Columbia Southern University
International Association of Arson Investigators (IAAI), Texas Chapter, 2007 - Present
International Association of Arson Investigators (IAAI), 2007 - Present
International Association of Fire Fighters (IAFF)
National Association of Fire Investigators (NAFI), 2005 - Present
Texas Firefighters Association, 1987 - Present
Tarrant County Fire and Arson Investigators Association (TCFAIA), 2005 - Present
North Texas Fire Investigators Association (NTFIA), 2008 - Present

SPECIALIZED EDUCATION

Complex Arson Investigation Techniques for the Insurance Industry (IAAI) 2014
A.A.S. - Occupational Safety & Health, Columbia Southern University 2012
Texas IAAI Arson Conference, Austin, TX 2012
Pate Hands-On Vehicle Fires – Tested 2012
CVFI (NAFI) - Tested 2012
Texas IAAI Arson Conference, Austin, TX 2011
NFA – Forensic Evidence Collection, Emmitsburg, MD 2011
South Texas Arson Conference, South Padre, TX 2010
NFA – Fire/Arson Origin and Cause Investigations, Emmitsburg, MD 2010
NFA 25–Inspections, Testing and Maintenance of Water Based Fire Protection Systems, Houston, TX 2010
NFPA 72 - Inspections Testing and Maintenance of Fire Alarms, Houston, TX 2010
East Texas Arson Seminar, Longview, TX 2009
Certified Fire Investigator (IAAI-CFI) Tested 2009
Legal Aspect of Fire Investigations, North Richland Hills, TX 2009
East Texas Arson Seminar, Longview, TX 2008
NFA – Developing Fire & Life Safety Strategies, Emmitsburg, MD 2008
NFA – Plans review for Inspectors, Emmitsburg, MD 2007
TCLEOSE Basic Police Officer 2007
Intermediate Fire/Arson Investigator 2007
Intermediate Fire Inspector 2007
IAAI Texas Chapter Arson Seminar, Austin, TX 2007
TEEX – Courtroom Preparation for First Responders, Benbrook, TX 2006
Certified Fire and Explosion Investigator (NAFI-CFEI) Tested 2006
Advanced Firefighter 2005
Juvenile Fire Setter Intervention Specialist I & II Tested 2005
IAAI Texas Chapter Arson Seminar, Austin, TX 2005
Hazardous Material Technician School, Dallas, TX 2000
Paramedic School, Hurst, TX 1985
Basic Firefighter School, Bedford, TX 1983



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011



Rimkus Consulting Group, Inc.
650 N.E. Holladay Street, Suite 1600
Portland, Oregon 94232
(877) 677-6157 Telephone
(425) 650-4777 Facsimile

December 17, 2018

Re: RCG File No: 76000184
LLV Number: 1267535
VMF Location: 1050 25th Street Southeast Salem, Oregon
Subject: Preliminary Report

Dear

On November 11, 2018, a fire occurred to a 1992 Grumman LLV 1267535, located at 150 Edwards Road in Monmouth, Oregon. The vehicle identification number was 1GBCS10A2N2905507. At the time of our inspection, the odometer reading was 122,555. It was reported that the postal carrier, was delivering mail at a customer's house and the customer informed her that the LLV was on fire.

On November 20, 2018, an examination of the LLV was conducted at the Salem, Oregon vehicle maintenance facility located at 1050 25th Street Southeast in Salem, Oregon. In the course of our work, we examined the vehicle, documented with photographs, reviewed the maintenance records, and collected the Optima Red Top Group 34 vehicle battery, part number SC34U, the battery post, and the melted plastic mount as evidence. Prior to our arrival on site to conduct the inspection, the battery, the battery post, and the melted remains of the mount were placed on the interior mail side front wheel well area. This assignment was performed by Fire Consultant J. Christopher Lyman, IAAI-CFI (V). This report was reviewed by Technical Fire Manager David R. Meyers, IAAI-CFI (V).

During our investigation, we applied the methodology of fire investigation using the systematic approach as recommended in the current edition of National Fire Protection Association, NFPA 921 – "Guide for Fire and Explosion Investigations" and NFPA 1033 – "Standard for Professional Qualifications for Fire Investigator".

Conclusions

1. The fire originated in the engine compartment of the involved LLV.
2. The specific area of origin was located at the battery on the right side of the engine compartment.
3. The specific ignition sequence and the failure or malfunction of the battery is unknown pending a laboratory examination by an engineer.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and progressed in a clockwise pattern. We did not observe any smoke, heat, or fire damage to the exterior of the vehicle. There was no physical evidence observed on the exterior of the LLV that would have caused or contributed to the cause of the fire.

Interior Inspection:

An examination of the interior of the vehicle was conducted. No smoke, heat, or fire damage to the interior components of the vehicle was observed. There was no physical evidence observed on the interior of the LLV that would have caused or contributed to the cause of the fire.

Engine Compartment Inspection:

An examination of the engine compartment was conducted. The vehicle was equipped with a GM 2.5L four-cylinder engine. The engine was equipped with a throttle body fuel injected system. The vehicle had a standard ignition coil. Smoke and soot damage to the underside of the hood and to the battery tray on the right side of the LLV was observed. Severe fire and heat damage was observed to the LLV Optima battery on the right side of the engine compartment. The positive terminal melted off the battery housing as a result of the fire. The plastic mounting bracket melted to the battery tray as a result of the fire.

We examined the electrical conductors that led from the battery terminals and did not observe any adverse electrical activity or failure to the vehicles electrical system. We examined the alternator and starter and did not observe any adverse electrical activity or failures. The oil level was checked and was approximately 1 quart low. The transmission fluid level was at an acceptable level. Based on the fire patterns observed, the battery was determined to be the point of origin.

Undercarriage Inspection:

No fire damage was observed to the majority of the underside of the vehicle, except for a limited area below the rear of the engine compartment that appears to have been caused by drop down from above. Fuel lines on the undercarriage were intact along the mail side frame rail and as they went up the center of the engine block. The LLV was mounted on a GM general frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The exhaust system was intact and undamaged. The overall observation was that the fire began above the undercarriage and more specifically within the rear of the engine compartment along the bulk head. All four tires were intact.

Fuse Panel Inspection:

Examination of the fuse panel did not reveal any fire damage or blown fuses.

Area of Fire Origin:

The area of origin was determined to be the right side of the engine compartment at the Optima Red Top Group 34 vehicle battery.

Potential Contributing Factors:

The failure or malfunction of the battery is unknown pending a laboratory examination by an engineer.

Evidence Collected:

The LLV Optima Red Top Group 34 vehicle battery along with the positive side post, and melted fire debris in the area of origin was collected.

Witness Statement:

Ms. stated that when she arrived at the customer's residence, the check engine light illuminated. She turned the ignition to the "off" position and noticed smoke coming from under the dashboard on the right side of the vehicle. Ms. stated that the customer said there was a fire in the engine compartment.

Service Records:

A review of the involved LLV service records was requested and reviewed. Several items had been repaired within the engine compartment prior to the fire. Work completed within the engine compartment may have contributed to the fire but could not be confirmed.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

J. Christopher Lyman

J. Christopher Lyman, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

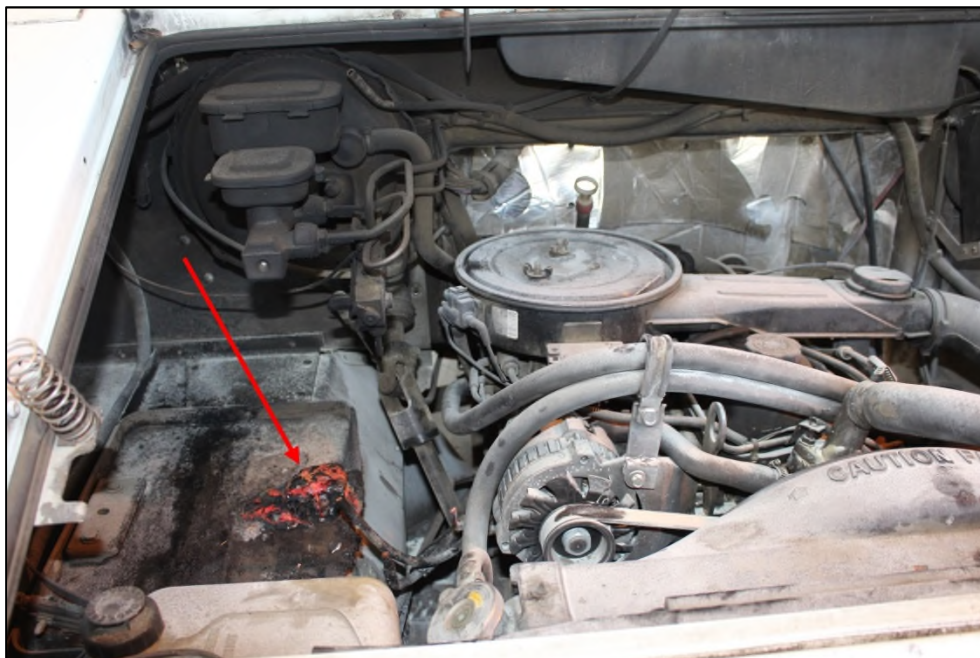
Attachments: Photographs, Curricula Vitae

December 17, 2018
RCG File No. 76000184

Photograph 1
LLV 1267535.



Photograph 2
Right side engine compartment; battery tray location.



December 17, 2018
RCG File No. 76000184

Photograph 3

Optima Red Top Group 34 vehicle battery, part number SC34U.



Photograph 4

Positive side battery post.



December 17, 2018
RCG File No. 76000184

Curricula Vitae



JEREMY “CHRIS” LYMAN, IAAI – C.F.I. FIRE CONSULTANT

Mr. Lyman is currently in-process of completing his Bachelor of Science in Fire Science Administration with Eastern Oregon University. His experience and knowledge covers over 20 years in the fire service industry with the last 12 years as a full-time fire investigator, fire captain, deputy fire marshal, and safety professional. He is a Certified Fire Investigator (C.F.I.) through the International Association of Arson Investigators (IAAI) and a Certified Fire Inspector II through the International Code Council. Mr. Lyman is experienced in the interpretation and enforcement of the International Fire Code as it relates to fire, life safety and egress in existing buildings and new construction as well as fire protection systems.

In addition to over 400 fire investigations, Mr. Lyman’s areas of expertise include fire origin and cause investigations, researching codes and providing training and evaluating fire investigators. Mr. Lyman has taught fire investigation and related courses through Umpqua Community College. He has conducted fire and explosion investigations throughout his career to include commercial, residential, heavy equipment and automotive related property.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Certified Fire Investigator (C.F.I.) International Association of Arson Investigators (I.A.A.I.)
Certified Fire Investigator – Vehicle (C.F.I.) (V) (I.A.A.I.)
Certified Fire Inspector II – International Code Council – Certification Number: 5264372
Licensed Private Investigator – Oregon, Washington
International Association of Arson Investigators – I.A.A.I. – Member
International Association of Arson Investigators – I.A.A.I. Washington Chapter – Member
International Association of Arson Investigators – I.A.A.I. Oregon Chapter – Member

EMPLOYMENT HISTORY

2017 – Present	Rimkus Consulting Group, Inc.
2015 – 2017	Pierce County Fire Prevention Bureau
2013 – 2015	Michael Baker International
2012 – 2013	Dyncorp International
2010 – 2012	Chris Lyman Consulting
2011 – 2012	Umpqua Community College
2009 – 2012	Oregon State Fire Marshal
2006 – 2007	Oregon State Fire Marshal
2003 – 2005	Kellogg Brown & Root Services
2000 – 2001	EG&G Defense Materials
1996 – 1997	Moffet Federal Airfield (NASA)
1991 – 1996	United States Air Force



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault, 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus Consulting Group, Inc.
13900 Alton Parkway, Suite 123
Irvine, California 92618
(877) 978-2044 Telephone
(714) 954-1952 Facsimile

February 23, 2018

Re: RCG File No: 71806491
LLV Number: 3302387
VMF Location: 15338 Elliot Avenue La Puente, California
Subject: Preliminary Report

On December 19, 2017, a fire occurred involving USPS LLV 3302387. LLV 3302387 was repaired and placed back into service prior to our examination, and the LLV was not available for inspection. VMF Manager presented us with the starter motor, related components, and battery cable section, at the VMF located at 15338 Elliot Avenue in La Puente, California, on December 21, 2017.

Rimkus Consulting Group, Inc. was retained to examine LLV 3302387, VIN unconfirmed, to determine the cause of the fire. During our investigation we conducted an examination of the fire damaged LLV components, and documented the vehicle with photographs. In the course of our work, the vehicle examination was conducted by Fire Consultant David A. Lowe, IAAI-CFI, on December 21, 2017. This report and case was reviewed by David Meyers, Technical Fire Manager.

While performing our investigation we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the vehicle.

2. The specific area of origin could not be conclusively identified at the time of our examination due to the vehicle being repaired and placed back in-service.
3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of our examination due to the vehicle being repaired and placed back in-service.
4. We could not eliminate the possibility of a high-resistance connection or an adverse electrical event generating heat until the combustible materials located in the area of the starter motor reached their ignition temperature as a cause of the fire.

Observations

Exterior Inspection:

No LLV inspection performed.

Interior Inspection:

No LLV inspection performed.

Engine Compartment Inspection:

No LLV inspection performed.

Undercarriage Inspection:

No LLV inspection performed.

Fuse Panel Inspection:

No LLV inspection performed.

Area of Fire Origin:

Starter motor.

Potential Contributing Factors:

Failed starter motor solenoid.

Evidence Collected:

Starter motor, related starter motor components, battery cable section.

Service Records:

A review of the provided service records for the involved LLV was conducted. There nothing in those records that would indicate to a mechanical failure prior to the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

David A. Lowe

David A. Lowe, IAAI-CFI
Fire Consultant

David R. Meyers

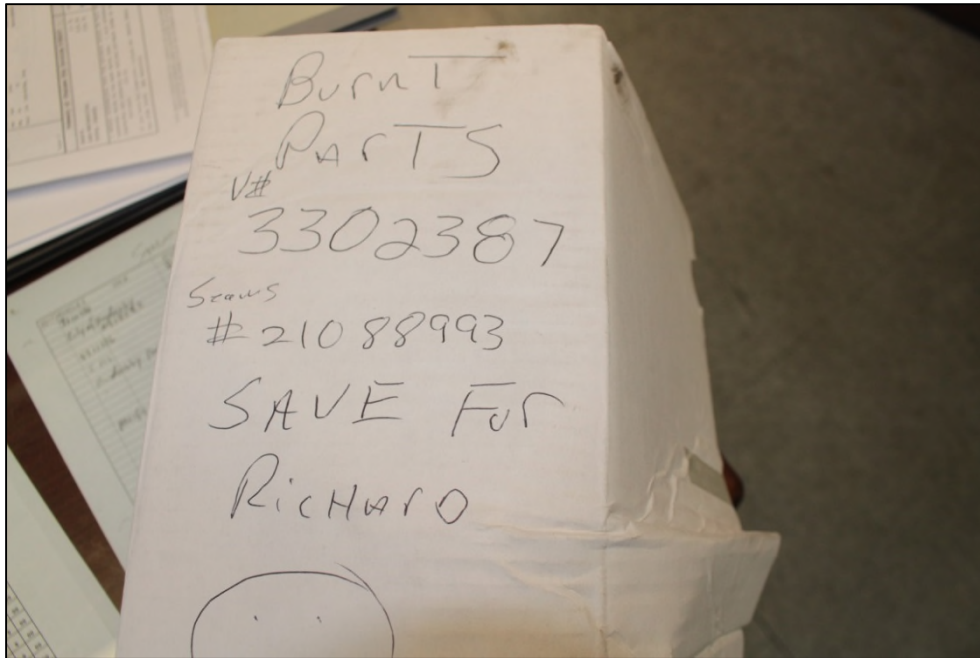
David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

February 23, 2018
RCG File No. 71806491

Photograph 1

Box containing parts from LLV 3302387.



Photograph 2

Starter motor and related components.



Photograph 3

Starter motor and battery cable section.



Photograph 4

Battery cable section where connected to starter motor.



February 23, 2018
RCG File No. 71806491

CVs



DAVID A. LOWE, IAAI-CFI FIRE CONSULTANT

Mr. Lowe is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, Certified Fire Investigator I with the California State Board of Fire Services, and Certified Fire Investigator with the National Board on Fire Service Professional Qualifications. He is a Licensed Private Investigator with the California Bureau of Security & Investigative Services and is a Registered Private Investigator with the Nevada Private Investigators Licensing Board, and is FIT Certified to work in asbestos contaminated environments.

Mr. Lowe is a court qualified expert witness with 25 years experience in the private sector investigating fires and explosions to determine origin and cause. The majority of incidents investigated involved structures ranging from residential garages to the largest hotels and commercial buildings, including the MGM Grand Hotel and Hilton Hotel in Las Vegas, Nevada. Other investigations have included automotive, maritime, mechanical, aircraft, and wild land. Investigations and consultations, conservatively estimated at over 1,500, have been performed on fire and explosion incidents involving injuries, fatalities, and damages totaling in the hundreds of millions of dollars. Domestic investigations have been performed in the states of Texas, Arizona, Nevada, California, Washington, Alaska, and Hawaii, with international fire investigations in Otago, Mexico and Taber, Alberta, Canada.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science/Fire Prevention Technology - Cogswell Polytechnical College, Sunnyvale, California

B.S. - Business Administration/Finance and Property Management - Cal. Poly, San Luis Obispo, California

Computer Science, Police Science, Electrical Technology - Saddleback College, Mission Viejo, California

Building construction for the fire service, Fire Science - Santa Ana College, Santa Ana, California

International Association of Arson Investigators – Member

California Conference of Arson Investigators – Member

EMPLOYMENT HISTORY

2015 to Present	Rimkus Consulting Group
2010 to 2015	Unified Investigations & Sciences, Inc.
2009 to 2010	Cogswell Polytechnical College/Prudential Real Estate
1998 to 2008	HomeFinancingNetwork.net, Inc., et al
1980 to 1998	Lowe Fire Investigations
1968 to 1980	Jasich & Lowe Fire Investigators & Consultants



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



Rimkus North Carolina, PLLC
5900 Harris Technology Blvd, Suite P
Charlotte, North Carolina 28269
(704) 896-6227 Telephone
(704) 896-6228 Facsimile
Certificate of Authorization No. P-1101
Certification Expiration Date June 30, 2018

February 23, 2018

Re: RCG File No: 47108506
LLV Number: 7201604
VMF Location: 2901 Scott Futrell Drive Charlotte, North Carolina
Subject: Preliminary Report

Dear

On January 25, 2018, a fire occurred involving LLV 7201604 at 2050 Carolina Place in Fort Mill, South Carolina. On January 31, 2018, Rimkus Consulting Group, Inc. was retained to examine LLV 7201604, VIN 1GBBS10E5H2301615. The LLV was a 1987 Grumman with a GM chassis.

On February 5, 2018, we conducted an initial examination of the LLV at the Charlotte, North Carolina vehicle maintenance facility located at 2901 Scott Futrell Drive in Charlotte, North Carolina. In the course of our work, we examined, documented, and photographed the vehicle. Our work to complete this assignment was performed by Fire Consultant Van D, Tuley, IAAI-CFI (V). A technical review of this report was performed by Fire Division Manager David R. Meyers, IAAI-CFI (V).

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA 921 - "Guide for Fire and Explosion Investigations".

Conclusions

1. The fire originated in the engine compartment of the LLV.
2. The specific area of origin was identified as the area of the fuel injection system located under the air filter in the engine compartment.

3. The specific ignition sequence and cause of the fire could not be conclusively determined at the time of the initial examination.
4. The fuel injection system would need to be disassembled and examined by engineer to determine a possible contributing factor for the fire.

Observations

Exterior Inspection:

No visible fire damage was observed to the exterior of the vehicle.

Interior Inspection:

No visible fire damage was observed to the interior of the vehicle.

Engine Compartment Inspection:

All fire damage was contained to the engine compartment. The fire damage in the engine compartment was contained to the area of the fuel injection system located under the air filter. Severe fire damage was observed to electrical wiring that was in close proximity to the fuel injection system.

Undercarriage Inspection:

No visible fire damage was observed to the undercarriage of the vehicle.

Fuse Panel Inspection:

Examination of the fuse panel revealed that all of the fuses were intact and none of the fuses were blown.

Area of Fire Origin:

The fire originated in the area of the fuel injection system under the air filter for the LLV.

Potential Contributing Factors:

We were not able to determine the cause of the fire or the potential contributing factors at the time of our initial examination of the LLV. The fuel injection system would need to be disassembled and examined further to determine a possible cause of the fire.

Evidence Collected:

No physical evidence was collected at the time of our initial examination.

Interviews

The mail carrier at the time of the fire incident, indicated that she had just delivered mail to a business located at 2050 Carolina Place in Fort Mill, South Carolina. She returned to the LLV and attempted to start it. She stated that after she attempted to start the LLV she saw smoke coming out from the engine compartment. She then sought help from the local business owner, who opened the hood of the LLV, at which time they observed fire in the engine compartment. The business owner was able to put the fire out with a fire extinguisher.

Service Records

A review of the service records for LLV 7201604 revealed that the last preventative maintenance for the vehicle was in August of 2017. The records showed that the vehicle was brought in on July 16, 2017, and work was completed on the vehicle on August 12, 2017. One of the items listed on the maintenance record indicated that the engine for LLV 7201604 was replaced during that period of time.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS NORTH CAROLINA, PLLC

Van D. Tuley

Van D. Tuley, IAAI-CFI (V)
Fire Consultant

David R. Meyers

David R. Meyers, IAAI-CFI (V)
Technical Fire Manager

Attachments: Photographs, CVs

February 23, 2018
RCG File No. 47108506

Photograph 1

Front view of LLV 7201604.



Photograph 2

Right side of the LLV.



February 23, 2018
RCG File No. 47108506

Photograph 3

Rear view of the LLV.



Photograph 4

Left side of the LLV.



Photograph 5

Engine compartment of the LLV.



Photograph 6

Fire damage in the area of the fuel injection system.



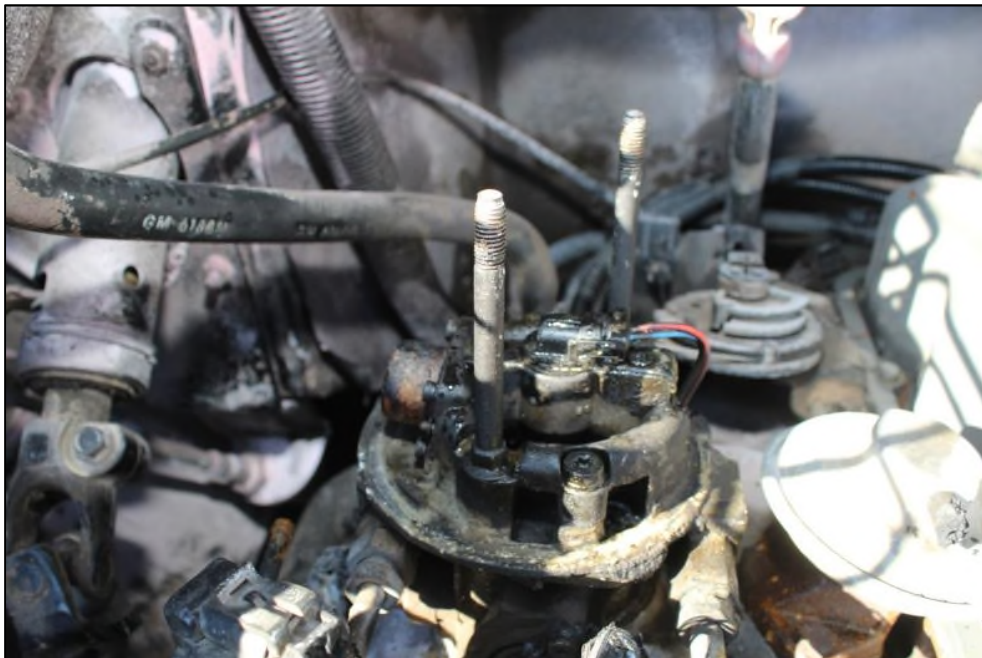
Photograph 7

Damaged electrical wiring in the area of the fuel injection system.



Photograph 8

Damage to the fuel injection system.



February 23, 2018
RCG File No. 47108506

Photograph 9

Damage to the air filter housing.



February 23, 2018
RCG File No. 47108506

CVs



VAN D. TULEY, IAAI-CFI FIRE CONSULTANT

Mr. Tuley is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators. Mr. Tuley is a Licensed Private Investigator in North Carolina, South Carolina, and Georgia. He served as a Special Agent with the United States Department of Justice Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) for over twenty four years, the last fifteen years as a Certified Fire Investigator (ATF-CFI). As an ATF-CFI he responded to approximately five-hundred fire scenes, to include residential and commercial structures. Mr. Tuley was also a member of ATF's National Response Team (NRT) for approximately sixteen years, responding to major fire and explosion losses throughout the United States. He has completed numerous educational seminars and classes in the field of fire investigation throughout his career. He has testified as an expert witness in both Federal and State court proceedings as well as depositions involving the investigation of fires.

Mr. Tuley has coordinated and instructed continuing education training seminars in fire investigation for State and Local fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Tuley has also instructed and given presentations in Fire Investigation and Fire Dynamics for the American Academy of Applied Forensics, the North Carolina Chapter of the International Association of Arson Investigators (NCIAAI), and local community colleges; Report Writing and Scene Documentation for the North Carolina Chapter of the International Association of Arson Investigators; Arson Investigation and the Science of Fire, Forensics for Criminal Litigators, at the National Advocacy Center in Columbia, South Carolina; Explosions and Explosives for the Fire Engineering Technology Program at the University of North Carolina at Charlotte; as well as numerous classes on Explosives Recognition, Responding to an Explosive Incident, and Processing Explosive Scenes to State, Local and Federal investigators. Mr. Tuley has also been an instructor for fire and explosive related classes at the Federal Law Enforcement Academy in Glynco, Georgia.

Mr. Tuley has over thirty years of combined investigative experience as a Police Officer and Detective for the Portage, Indiana Police Department and as a Special Agent with the Bureau of Alcohol, Tobacco, Firearms and Explosives.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

University of Evansville, Evansville, Indiana
Bachelor of Science in Law Enforcement - 1977

University of Evansville, Evansville, Indiana
Master of Science in Criminal Justice - 1979

Indiana Law Enforcement Training Academy, Plainfield, IN.
Basic Law Enforcement Academy - 1979



DAVID R. MEYERS, IAAI-CFI FIRE DIVISION MANAGER

Mr. Meyers is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators and a Certified Fire Investigator with the National Board of Fire Service Professional Qualifications (ProBoard). He served as a Fire Investigator for over twenty years with multiple jurisdictions, where he has investigated and determined the origin and cause of more than 1000 fires to include commercial structures, residential structures, vehicles, marine, and heavy equipment. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Meyers has testified in court proceedings and depositions involving the investigation of fire.

Mr. Meyers has extensive experience in all facets of the fire service, with over 32 years of municipal fire service experience. He came from municipal service as an Assistant Fire Chief after serving as a shift Commander and Firefighter Paramedic, and he is still an IFSAC Fire Inspector III. Mr. Meyers is a Certified Firefighter II by International Fire Service Accreditation Congress (IFSAC), Hazardous Materials Technician, and a Certified HAZWOPER Specialist by Cincinnati State College.

Mr. Meyers has also been trained in hazardous materials mitigation and HAZWOPER operations. Mr. Meyers also performed municipal fire inspections of residential, commercial, and industrial facilities for over 20 years. He has knowledge of National Fire Protection Association (NFPA) fire codes and building blueprint plan review regarding compliance with fire, life safety regulations, and building code compliance. Mr. Meyers has been responsible for review and approval of fire protection system plans including automatic sprinkler systems and fire alarm systems for compliance with local, state, and national applicable codes. He has served as an Emergency Management Coordinator and as a Firefighter Instructor. Mr. Meyers has also conducted Fire Protection reviews, reports, and recommendations for NASCAR at large assembly race tracks across the nation.

Mr. Meyers is a state licensed Fire Inspector III, Fire Instructor II, Building Inspector I, and Fire Officer II, and has knowledge of proper installation methods and procedures for residential, institutional, and commercial sprinkler systems, fire alarms, and commercial cooking equipment fire suppression systems.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

B.S. - Fire Science - Kaplan University, Milwaukee, WI

Community College of the Air Force
Associates Degree in Fire Protection (26 hrs.)

Central Piedmont Community College
Associates Degree in Fire Science (46 hrs.)

Department of Defense (IFSAC)
Firefighter II, 2003; Fire Inspector III, 2008; Fire Officer II, 2008; Fire Instructor II, 2007; Hazmat Incident Commander, 2006; Hazmat Technician, 2008; Rescue Technician II, 2012; Airport Firefighter, 2004

National Fire Academy, Emmitsburg, MD
Fire/Arson Investigation, 2007; Courtroom Testimony; Interview and Interrogation, 2008; Code Management: A Systems Approach, 2004; Principles of Fire Protection: Structures and Systems, 2005, 2011; Testing and Evaluation of Water Supplies for Fire Protection, 2005; Fire Inspection Principles, 2013

Cincinnati State College, Cincinnati, Ohio

DAVID R. MEYERS, IAAI-CFI

OSHA HAZWOPER Specialist, 2000, Confined Space Rescue, 2000

Public Agency Training Counsel (PATC)

Arson Case Management, 2000; Fire Origin and Cause - NFPA 921, 2005; Develop, Lift & Document Fingerprints, 2007; Electrical Fire Investigation, 2003

International Association of Arson Investigators Training

HAZWOPER Standard, 2010; Basic Fire Investigation, 2005; Scientific Method for Fire and Explosive Investigation, 2005; Vehicle Fire Investigations, 2007; The Greater Cincinnati Regional Arson and Fire Seminar, 1998; Scientific Method for Fire and Explosive Investigation, 2009; Investigating Motor Vehicle Fires, 2010; A Ventilation-focused approach to the impact of Building Structures and Systems on Fire Development, 2009; Understanding Fire Through the Candle Experiments, 2001; Vacant and Abandoned Buildings: Hazards and Solutions, 2010; Investigating Fatal Fires; 2009; Managing Complex Fire Scene Investigations, 2011

National Board on Fire Service Professional Qualifications

Fire Investigator, NFPA 1033, (compliant with current edition)

North Carolina Fire and Rescue Commission

Certified Firefighter II, 2002; Fire Inspector III, 2002; Airport Firefighter, 2004; Hazmat Technician, 2008

Ohio Fire Academy

Firefighter II, 1996; Underground Storage Tank Installers Regulation – MAST (Modern American Safety Training), 1999; Underground Storage Tank Inspector Certification – State of Ohio Fire Marshal's Office, 1998; Underground Storage Tank: Fire Service Certification, 1999; Pyrotechnics for Fire Safety Inspectors, Fire Prevention Officer and Police, 1998; NFPA 1123 Regulations for Pyrotechnics Course 2000; Juvenile Fire Setters Course, 1998

Member of:

National Fire Protection Association (NFPA)
North Carolina International Association of Arson Investigators
International Association of Arson Investigators
North Carolina Firefighters Association
International Association of Fire Chiefs
International Association of Fire Marshals
National Association of Fire Investigators

Military:

US Army – Infantry, Airborne, Air Assault,: 1983 – 1985
North Carolina Air National Guard – Fire Protection Specialist, 2003 – 2012
Operation Iraqi Freedom, Ali, Iraq, 2006
Operation Jump Start, Arizona Border Patrol, 2008
Operation Enduring Freedom, Kandahar Afghanistan, 2010

Awards:

FEMA, Certificate of Achievement: Professional Development Series in Emergency Management
Firefighter of the Year, 2007 Cabarrus County, Odell Fire and Rescue
Certificate of Appreciation – NASCAR
Certificate of Induction, US Air Force Non-Commissioned Officer

EMPLOYMENT HISTORY

2013 to Present	Rimkus Consulting Group, Inc. - Richmond, VA (Fire Consultant)
2012 to 2013	Milwaukee County Fire Department. - Milwaukee, WI. (Asst. Fire Chief/Fire Marshal)
2010 to 2012	North Carolina Dept. of Public Safety Charlotte, NC (Asst. Fire Chief)
2001 to 2010	Concord Fire & Life Safety. – Concord, NC (Fire Marshal)
2001 to Present	Odell Fire Department – Cabarrus County, NC (Fire Captain)
1996 to 2001	Wilmington Fire Department - Wilmington, Oh (Fire Marshal)
1981 to 2001	Goshen Community Fire Department – Goshen, Oh (Firefighter Paramedic)



**FINAL REPORT
FOR
CONTRACT 2ATECS 14 B 00005**

**DETERMINING THE ORIGIN AND CAUSE OF FIRES
IN LONG LIFE VEHICLES (LLVs)
FOR THE
UNITED STATES POSTAL SERVICE**



DECEMBER 18, 2015

**PREPARED BY
TRIDENT ENGINEERING ASSOCIATES, INC.
2010 INDUSTRIAL DRIVE
ANNAPOLIS, MARYAND 20401**



TRIDENT ENGINEERING ASSOCIATES, INC.
2010 INDUSTRIAL DRIVE
ANNAPOLIS, MARYLAND 21401-2942

December 18, 2015

Ms. Lori Savage, J.D.
United States Postal Service
475 L'Enfant Plaza, SW, RM 1520
Washington, DC 20260

REF: USPS Contract 2ATECS 14 B 00005

Dear Ms. Savage,

Included with this letter you will find the Final Report of Trident Engineering Associates, Inc.'s for USPS Contract 2ATECS 14 B 00005.

Trident appreciates the opportunity afforded it through its efforts in fulfilling this contract. Helping the USPS discover the foundational issues surrounding the increased occurrences of fires in the Service's fleet of Long Life Vehicles (LLVs) has been very rewarding.

Implementation of the recommendations included in this report, and provided throughout the course of the contract, will make a huge difference in reducing the numbers of fires in the LLVs. It is gratifying to know that our efforts have already begun to save the USPS untold dollars in lost or damaged vehicles and, more importantly, significantly reduced the potential for personal injury or the loss of life.

While Trident found itself unable to submit a proposal for the continuation contract at the time of its offering, we are more than open to offering any assistance the USPS would desire related to investigations of the LLVs, other vehicles, or any other area of Forensic Engineering.

Very truly yours,

[Redacted Signature]
[Redacted Name], CFI, CFEI, CFVI
Director of Fire Science and Investigations

[Redacted Signature]
[Redacted Name] IAAI, CFI
Reviewing Associate

[Redacted Signature]
[Redacted Name], CFI, CFEI, CFVI
Fire Investigating Associate

[Redacted Signature]
[Redacted Name]
Director of Operations



TABLE OF CONTENTS

	Page
INTRODUCTION	4
EXECUTIVE SUMMARY	5
CASE INVESTIGATIONS AND DESCRIPTIONS.....	7
DISCUSSION AND STATISTICAL DATA.....	141
RECOMMENDATIONS AND CONCLUSIONS.....	147



INTRODUCTION

In May 2014, Trident Engineering Associates, Inc. (Trident) was awarded contract 2ATECS 14 B 00005, commencing on June 2, 2014, and concluding on June 1, 2015. Two Modifications were made to the original contract extending its concluding date to September 30, 2015.

The Vehicle Engineering Department of the United States Postal Service (USPS) had noted a significant increase in the number of instances of reported fires in its fleet of Long Life Vehicles (LLVs). In an attempt to determine the causes of fires in the LLV fleet, and to discover overall trends or conditions related to the fires, Trident was enlisted to examine the fires in the USPS LLV fleet as laid out in the Statement of Work.

Trident's investigative team was led by [REDACTED], CFI, CFEI, CVFI. Joining [REDACTED] in the vehicle examinations were [REDACTED] CFI, CFEI, CVFI; Dr. [REDACTED], P.E. – Mechanical Engineer; [REDACTED] – Electrical Engineer; [REDACTED], CFI; and [REDACTED] – Materials Engineer.

Trident Engineering Associates, Inc. appreciates its partnership with the USPS in its efforts during the fulfillment this contract. Trident received cooperation and support from the employees of the USPS. The USPS units included the Vehicle Engineering Department, Vehicle Maintenance Facilities and individual Post Offices.



EXECUTIVE SUMMARY

On June 2, 2014, Trident Engineering was authorized by the United States Postal Service, to begin investigating fires occurring in Long Life Vehicles (LLV) across the United States including Puerto Rico. Since that date, Trident has determined several ongoing problems/issues associated with LLV age, maintenance, and operation.

From June 2, 2014, through October 31, 2015, a total of 96 LLV fires were reported to and investigated by Trident. This final report summarizes the discussion and conclusion on all 96 fire investigations of the LLVs conducted by Trident during this contract. An analysis of these fires is presented to look for overall trends and/or patterns. These findings are intended to provide information to the USPS for reducing fires and extending the useful life of the LLVs as much as possible.

The following three conditions are areas of major concern related to fires in the LLV fleet. A more detailed analysis is provided in the Recommendations and Conclusions section of this final report beginning on page 147.

AGE OF VEHICLES

Trident's findings in relation to the vehicle's age have found, part failures are occurring in heavily used vehicle components (e.g. headlamp switches, wiring harnesses, turn signal switches, and fuse blocks). As part of each investigation, a parts record search was conducted to identify the component's age and/or if the part was original or a replacement to the vehicle.

MAINTENANCE OF VEHICLES

Trident's findings in relation to maintenance determined that due to the lack of spare vehicles and time constraints, maintenance is often hurried and not completed in a methodical diagnostic fashion. These repairs led to quick fixes far too often. Associated with maintenance problems is a lack of supervised control over the sub-contractors who provide maintenance for a portion of the fleet. An additional maintenance issue is associated with time in labor and replacement cost required to make fleet wide repairs. For example, the electrical systems in the vehicles have deteriorated as a result of heavy use, age, and high temperatures during vehicle operation, and should be replaced fleet wide.

VEHICLE OPERATION

Trident's findings in relation to vehicle operation have found the vehicles to be abused. When originally designed, approximately 20-30 years ago, the vehicles were intended to be used approximately 4 hours a day. Currently, the vehicles are used an average of 6-10 hours a day and 7 days a week. The task of delivering mail



has greatly increased in time and quantity. Supervisors keep operators out on their routes delivering the mail to minimize any back log. Needed repairs are not attended to when discovered, and are often ignored until the vehicle stops running or a catastrophic failure occurs.

Trident has found that, prior to use, most of the vehicles are not checked for fluid levels and leaks. This is a simple task that does not require a certification or a mechanic. This task can prevent long term loss of use and/or the complete loss of a vehicle. Trident has also found vehicles are routinely operated in conditions that are not safe (e.g. vehicles being operated with an odor of gas, backfiring, and loud unusual engine noises).

Trident has also found that major delays in reporting fire incidents to 911 have resulted in vehicle loss. At the start of Trident's work on the project, the protocol was for operators to contact their supervisor and discuss the problem prior to calling 911. Often times the supervisor is not available and phones are not answered resulting with the vehicle operator attempting to continue to call and search for a supervisor. As a result of Trident's work, this procedure has been modified to have the carrier contact 911 as soon as possible.

Trident has also found vehicle loss occurring due to vehicles being driven beyond their capabilities and without proper equipment (e.g. deep snow, ice and mud). These vehicles are not equipped for these conditions. Therefore the mentality of "the mail must go through" has taken over common sense and safety.



INVESTIGATIONS AND CASE DESCRIPTIONS

From June 2, 2014, through October 31, 2015, a total of 96 LLV fires were reported and investigated. Initial information for individual cases was submitted to Trident by Mr. Jerrod Davis of the USPS, by way of a dedicated submission form. Utilizing this information, Trident's investigators made contact with Vehicle Maintenance Facility Managers and Post Office Postmasters to arrange a site visit.

Investigations of the fires were conducted in accordance with (National Fire Protection Association) NFPA 921. Trident's investigations included interviews with available personnel, documentation of the loss site, and a physical examination of the subject vehicle. Documentation of the events included photographs, accident reports, written statements, maintenance records, and any other relevant information. Following its investigation of each vehicle, a report of findings was produced and provided to the USPS Engineering Department.

To insure excellent communications, monthly meetings were held between USPS and Trident. Each meeting included a summary report of investigation. These meetings not only served to insure transmission of information, but became an excellent source of reflection and brainstorming regarding the trends and patterns observed in the fires, and ways to consider potential repair protocol.

Summarized below is a discussion and conclusion of all 96 fire investigations of the LLVs conducted by Trident during this contract. An analysis of these fires is presented following this section to look for overall trends and/or patterns. These findings are intended to provide information to the USPS for reducing fires and extending the useful life of the LLVs as much as possible.



LLV#:3318871
Location: Findlay, Ohio
DOL: 5/27/2014

Trident Contract Number: 1605-002
Engine: 2.2 Liter

DISCUSSION

The involved vehicle was determined to have only been serviced by an outside contractor that preformed all repairs to the vehicle. The vehicle had the head gasket replaced in April of 2014. This replacement would have involved the removal of the front end accessory drive bracket that the battery cable was attached to. Trident was advised by [REDACTED] that the cable would not have to be removed for this repair. The manipulation of this wire for the head gasket replacement may have added to the normal wear of the cable's insulation at the wire clamp. Trident recommends that during the "A" and "B" inspections and after all engine repairs the wiring in the engine compartment be examined for damaged or worn insulation and replaced as needed.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV # 3318871, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the left side of the engine where the main battery cable was attached to the engine using a metal clamp.
3. The cause of this fire is determined to be electrical in nature, with the failure of the insulation on the cable causing arcing at the clamp and heating of the wire. This wire heating raised the temperature of the cable's insulation to its point of ignition.



View of battery clamp at failure point.



LLV#: 7206337
Location: Broad Run, Virginia
DOL: 5/4/2014

Trident Contract Number: 1605-003
Engine: 2.2 Liter

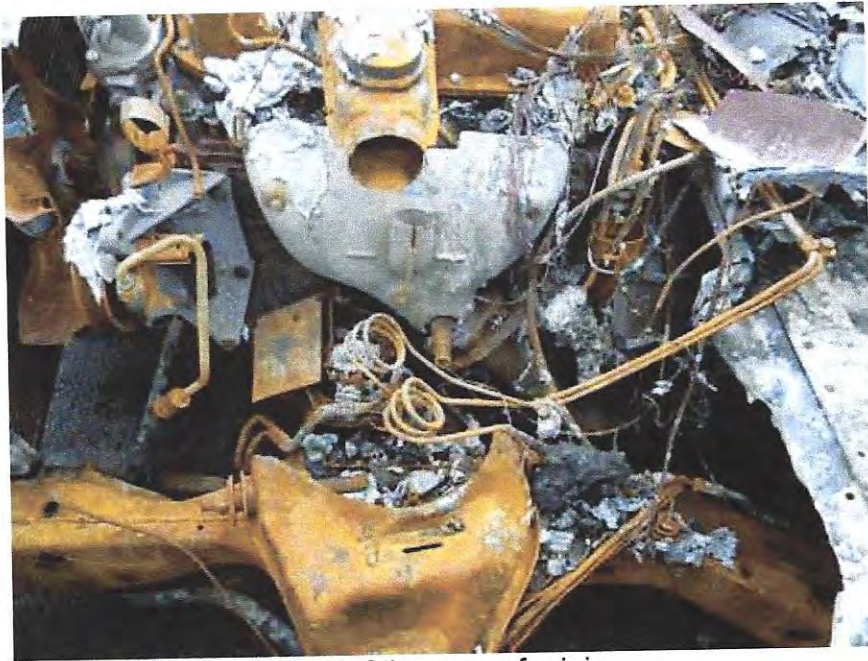
DISCUSSION

The involved vehicle was serviced by an outside contractor as well as the Dulles Vehicle Maintenance Facility. The vehicle had a rollover accident in April of 2014. A retrofitted fuel line was added to the engine. The old fuel filters were rusting and hard to change in their position. The retrofitted line, a combination of steel and rubber fuel lines, was manufactured by Davco. The close proximity of the rubber connecting hose to the exhaust manifold, along with the heat from engine and normal wear and tear, resulted in the failure of the rubber fuel line. Trident recommends that during the "A" and "B" inspections, and after all engine repairs, the fuel lines, especially the rubber lines, be examined for damage and replaced or shielded as needed.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV #7206337, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the left side of the engine where the rubber connecting fuel line ran into the engine.
3. The failure of the rubber fuel line was caused by excessive heat from the engine (exhaust manifold). The excessive heat appeared to have caused the hose to fail; leaking fuel was determined to be the source of ignition.
4. The cause of this fire is determined to be a mechanical failure, with the failure of the rubber fuel line causing a hot surface ignition, as fuel was being pumped onto the exhaust manifold.



View of the area of origin.



View of left side fire patterns.



LLV#: 4305013
Location: Anderson, Indiana
DOL: 6/5/2014

Trident Contract Number: 1605-004
Engine: 2.5 Liter

DISCUSSION

After examination of all facts involved in this loss, Trident has determined that the vehicle had contractor repairs completed on May 29, 2014. These repairs involved the replacement of the 10 amp ECM fuse to solve a non-starting problem. The cause of this blown fuse was not determined.

On June 5, 2014, the vehicle ignited with the fire involving the wiring harness on the right side of the vehicle at the bulkhead. Examination of the harness revealed a failed power supply wire for the vehicle headlights; within the harness, the ECM wiring is also contained. The failure of the headlight power feed also affected the other wiring within the harness.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV 4305013, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The origin of this fire was at the wiring harness located on the right side of the vehicle at the bulkhead.
2. The cause of this fire is determined to be the failure of the headlight wire.



Headlight power feed failure in wire harness.



LLV#: 2208216
Location: Las Vegas, Nevada
DOL: 6/20/2014

Trident Contract Number: 1605-005
Engine: 2.5 Liter

DISCUSSION

The involved vehicle was only serviced by the Las Vegas Vehicle Maintenance Facility. The vehicle had some specific problems with the battery/starter in the past year. A combination of the constant use of the flashers/electrical system along with the dust in the fender well contributed to this fire. Trident recommends that, during the "A" and "B" inspections and after all engine repairs, the electrical systems be checked and evaluated. Also, due to the dry climate, the engine and passenger compartments should be cleaned on a routine basis.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV No. 2208216, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the right side marker/flasher connection located in the fender well.
3. The electrical failure of the connection caused a fault. The ignition source was fueled by the light plastic wire loom and dust accumulation within the fender well.
4. The cause of this fire is determined to be an electrical failure, with the failure of the connection of the side marker/flasher in the fender well.



View of the area of origin.



View of flasher wiring



LLV#: 2213684
Location: Chester, Pennsylvania
DOL: 6/30/2014

Trident Contract Number: 1605-006
Engine: 2.5 Liter

DISCUSSION

Trident learned from [REDACTED] that the vehicle exhibited smoke conditions when he pulled on to the parking lot of the post office. He at that point shut down the vehicle and found fire conditions under the vehicle. He then drifted the vehicle away from the building to the lower end of the parking lot. It should be noted he would have had to turn the ignition key to "on" to steer the vehicle away from the building. Turning the ignition on would have restarted the fuel pump and continued the fuel flow.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of Vehicle No. 2213684, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The origin of the fire was in the engine compartment on the left side.
2. The vehicle's fuel system is located in this area.
3. The cause of this fire is found to be a failure of the rubber fuel lines leading from the fuel filter.
4. These fuel lines are located in a very close proximity to the engine manifold.
5. The failure of the fuel lines would have been the result of thermal breakdown of the rubber lines from the heat of the manifold.



Fuel line failure.



LLV#: 2216897
Location: Marianna, Florida
DOL: 7/19/2014

Trident Contract Number: 1605-007
Engine: 2.5 Liter

DISCUSSION

Trident's initial examination of the involved vehicle components that were replaced on LLV No. 2216897 determined the fire to have originated at the headlight dimmer switch. This switch had been replaced on April 19, 2014. Trident learned that on July 31, 2014 another fire had occurred involving the same switch on a different vehicle, LLV No. 3318551. This switch was replaced on January 14, 2014. Due to the failure of these switches, Trident will examine an exemplar switch to determine if there are any manufacturing issues with this part. This examination will be completed when the exemplar part is made available to Trident.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV No. 2216897, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The fire originated in the headlight dimmer switch.
2. This switch is located on the left side of the steering column.
3. Further examination of this switch and provided exemplar is required.

Electrical Engineer Report

OBSERVATIONS

On December 17, 2014, [REDACTED], Electrical Engineer with Trident Engineering, examined the evidence removed from the above-described vehicle. This evidence consisted of a headlight hi-beam / lo-beam selector switch, an identical switch removed from service from an exemplar vehicle, and an identical switch purchased new for examination. These switches provide an alternate or "toggle" switching action, where one terminal, the "common" is alternately connected to terminal "A" or "B" with each mechanical action of the switch. This allows the vehicle driver to alternately select hi-beam and lo-beam operation of the headlights.

TESTING

The newly purchased and exemplar vehicle switches were tested for electrical resistance using a digital volt-ohmmeter. The new switch was subsequently opened and silicone grease was observed on the inner contact surfaces. After removal of this grease with a paper towel, and reassembly of the switch, resistance readings were taken again and recorded below.



Resistance readings of the exemplar vehicle and newly purchased switches were measured as follows:

Meter resistance reading with leads shorted (a minus correction): 0.3 Ohms
(This common resistance has been subtracted from all readings below)

New Switch:

Common to Position A: 0.8 – 11.3 Ohms, varies constantly
Common to Position B: 0.0 – 1.4 Ohms, varies constantly

Exemplar Vehicle Switch:

Common to Position A: 0.6 – Infinite Ohms, varies constantly
Common to Position B: 0.0 – 0.7 Ohms, occasionally infinite, varies constantly

New Switch with silicon grease removed:

Common to Position A: 0.1 Ohms, varies slightly
Common to Position B: 0.0 Ohms

DISCUSSION

This selector switch is utilized in the vehicle wiring to directly switch electrical current to the hi-beam and lo-beam filaments in the headlights. Typical lo-beam filaments draw 55 watts, or 4.6 amperes, for a total of 9.2 amperes through the switch for both headlamps. Hi-beam filaments typically draw 65 watts, for a total of 10.8 amperes through the switch. Indicator lights may add small amounts to these totals. With electrical currents of these magnitudes passing through the selector switches, an increase of resistance of just 0.1 ohm can add over 10 watts to the power dissipation within the switch. ($P = I^2R$, where P is in watts, I is in amperes and R is in ohms).

Resistance readings of the new switch were substantially affected by silicone grease placed over the contacts by the manufacturer to avoid oxidation of contacts prior to the switch being placed in service. Use of the switch with electrical current will typically quickly clean these contacts and bring resistances down near 0.0 ohms.

Resistance readings of the exemplar switch, however, were much higher than expected. These readings indicate that the switch has been designed with too little internal contact pressure. When sufficient pressure is not applied, contact surfaces build up oxidants and chemical compounds resulting from high temperature arcing which is encountered during switch transitions. The buildup of these materials on contact surfaces results in higher contact resistances which result in even higher temperatures and chemical buildup, a "snowball" effect. This is the cause of the subject vehicle's switch burning itself out as the high contact resistance caused many watts of electrical power to be dissipated within the switch, heating it up to the point of combustion of plastic parts. The exemplar vehicle was most likely well on its way to a similar failure of the switch.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the afore-mentioned hi-beam / lo-beam selector switch, Trident Engineering Associates, Inc. concludes to a reasonable degree of engineering certainty that the switch has low internal contact pressure inherent to its



design. This resistance results in substantial internal power dissipation and eventual overheating and ignition of internal plastic parts.

In preparing this report, Trident has been thorough and accurate and met the standards generally expected from members of the engineering profession and in accordance with our General Provisions. Trident reserves the right to revise its opinion if further information is discovered. By accepting delivery of this report, the recipient agrees that Trident shall not be liable for any special, indirect, incidental, or consequential loss or damage whatsoever.



Failure of High Beam Dimmer



LLV#: 1253740
Location: San Francisco, California
DOL: 7/18/2014

Trident Contract Number: 1605-008
Engine: 2.5 Liter

Electrical Engineer Report

OBSERVATIONS

Examination of the wire remnants retrieved from the vehicle indicate that two sections of approximately 10 gauge copper wire that had been connected to ground, heated up and melted. This separated two ground paths during the fire event. One of these paths connected the battery's negative terminal to the vehicle frame; the other connected the engine computer system to the vehicle's body, supplying the negative power return path for the computer. The failure of both of these wire segments indicates that a high current short, perhaps in the 100-500 ampere range, occurred in the engine's computer system. This type of short, without current limiting between the battery and the computer, could have easily caused these wires to heat up rapidly, melt and start the burning of adjacent materials. The absence of fuses, fusible links, or the disabling of either of these limiting types in the computer positive power supply could be a contributing factor in this event.

DISCUSSION

The fire origin and cause examination determined there to be three separate fires occurring within the involved vehicle; the first involving the wiring at the emergency brake, the second at the ground wire attached to the battery and the third located at the ground strap for the vehicle's computer. Determination of the first failure is not possible. These failures may have been caused by a failure within the computer and or failures of the battery or associated wiring.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of U.S.P.S vehicle #1253740, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. Three separate fire events occurred within this vehicle.
2. There is a possibility that the three events could be associated.
3. A determination of which event occurred first is not possible.
4. After a complete investigation of this fire loss, Trident has determined this fire to be undetermined in nature.
5. Any further information found involving this type of problem in other vehicles may lend information as to the origin and cause of this fire.



View of ground strap severed



View of ground wire



Three separate and distinct electrical events.



LLV#: 4315831
Location: New Haven, Connecticut
DOL: 8/5/2014

Trident Contract Number: 1605-009
Engine: 2.2 Liter

DISCUSSION

The involved vehicle was only serviced by the New Haven Vehicle Maintenance Facility. The vehicle had some specific problems with the battery/starter in the past year. A combination of the constant use of stopping and starting caused the tail shaft seal to dislodge from the rear transmission tail shaft housing. This action caused a loose or complete disconnect of the drive shaft which contributed to this fire. Trident recommends that during the "A" and "B" inspections and after all engine repairs, this seal be a part of the inspection.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV No. 4315831, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the underside of the vehicle in the center; specifically, near the transmission and driveshaft.
2. The point of origin was determined to be the driveshaft connection at the rear of the transmission.
3. The mechanical failure of the driveshaft caused sparks. The ignition source was fueled by the leaking oily fluid (transmission) which was sprayed backwards on the undercarriage of the LLV.
4. The cause of this fire is determined to be a mechanical failure, with the failure of the tail shaft seal causing the driveshaft to disconnect from the transmission.



View of hole/fire pattern, point of origin.



View of pattern and oily deposits.



LLV#: 3302808
Location: Hicksville, New York
DOL: 8/20/2014

Trident Contract Number: 1605-011
Engine: 2.5 Liter

DISCUSSION

Trident examined several other vehicles at the VMF that had the same fuel line configuration as the loss vehicle. This examination found the involved fuel lines to be mounted from 1.5 inches to 3 inches from the manifold.

This close configuration of the fuel line to the manifold may occur during the fuel filter replacement. Trident has determined that during the securing of the lower fitting on the fuel filter, if the solid fuel line position is not maintained, the securing process will turn the rubber hose in closer to the manifold.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of this fire loss, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The origin of the fire was in the engine compartment on the left side.
2. The vehicle's fuel system is located in this area.
3. The cause of this fire is found to be a failure of the rubber fuel lines leading from the fuel filter.
4. These fuel lines are located in a very close proximity to the engine manifold.
5. The failure of the fuel lines was the result of thermal breakdown of the rubber lines from the heat of the manifold.



Fuel line failure due to distance from manifold.



LLV#: 2208751
Location: Richmond, Virginia
DOL: 8/20/2014

Trident Contract Number: 1605-012
Engine: 1992 2.5 Liter

DISCUSSION

The examination of the photographs revealed fire damage to the interior dash of the LLV. The lower right side of the dash revealed the most damage. This area is where the flasher switch is located.

Determination of the cause of this fire is not possible at the time of this writing. A closer examination of the fire damage, wiring, and other vehicle systems needed to be conducted to rule out other possible causes.

CONCLUSIONS

Based upon a review of information gained from others and analysis of submitted photographs of the fire loss involving LLV No. 2208751, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The fire damage in the photographs suggests the dash is the area of origin. Specifically near the lower right side (driver's side) of the dash.
2. After an "interview only" investigation into this fire loss, Trident has determined this fire to be undetermined in nature.
3. Any further information found involving this type of problem in other vehicles may lead to information as to the origin and cause of this fire.
4. Without physically examining the vehicle and its systems, Trident cannot make a determination of origin and cause.
5. The photographs provided only suggest the origin of the fire.



View of vehicle stored condition.



View of burned wires.



LLV#: 1200965
Location: Plymouth, Minnesota
DOL: 8/26/2014

Trident Contract Number: 1605-014
Engine: 1991 2.5 Liter

DISCUSSION

Trident engineers will examine the bracket in an effort to determine if it had broken away prior to the fire or post fire. There is a possibility that if the bracket broke away pre fire, the power steering pump would have fallen into the fuel lines possibly rupturing them. Initial examination the bracket remains by [REDACTED] showed evidence of multiple cracks in the unit. An exemplar of the bracket has been requested to possibly reveal a manufacturing defect. This investigation will be ongoing.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the involved vehicle, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. Based on the above observations, Trident has concluded that the fire originated on the left front of the engine.
2. This area contains the power steering pump, mounted to the engine, and associated hoses as well as fuel lines.
3. If the power steering pump can be determined to have broken away, this would have caused the power steering fluid to have been sprayed onto the engine exhaust, causing ignition of the fluid.
4. Also, if the power steering pump broke away, it would have broken away the fuel lines that are mounted directly below and to the rear of this unit.
5. A complete examination of the exemplar power steering pump bracket and the bracket removed from the involved unit will be necessary.
6. This examination will possibly show a defect in materials and workmanship of the bracket that would have led to this fire.
7. Trident will generate an addendum to this report when the exemplar unit is received and examined.

Mechanical Engineers Report

OBSERVATIONS

Trident nondestructively examined the metal bracket which held the steering pump to the engine. A portion of the bracket was in place when first examined by Trident. The remainder of the bracket and the pump were not recovered.

The recovered portion was examined at Trident's office in Annapolis using hand lenses, a 13x-80x binocular microscope and a high intensity light.

The following observations were made of the cast part:

1. The fracture surface is not soiled like the cast surface which was exposed to grime during the part's service life;



2. No portion of the fracture surface was found to have discoloration or deposits indicative of long-term exposure to road dirt or grease from the engine compartment;
3. The surfaces of the casting are covered with cracks which extend from the fracture surface to the original cast surface on the rear of the part;
4. Cracks were oriented both parallel to and perpendicular to the fracture surface;
5. The surfaces had isolated cracked blisters;
6. The cracks appear to be shallow and exposed crack surfaces are bright, not covered with debris;
7. There were disruptions in the surface grime or indentations indicative of impact by a hammer or other tool;
8. The composition of the bracket was not determined.

DISCUSSION

The lack of dirt, grime or debris on the fracture surface indicates that the fracture is recent and a crack which caused the fracture examined was not present for an extended time.

The presence of many small cracks (with clean surfaces) on the surfaces of the bracket indicates that the bracket was subject to a distributed stress not a localized stress. It is likely that because the bracket was secured to the engine with bolts, thermal expansion during the fire stressed the bracket and created many small cracks on all surfaces.

The blisters with cracks are probably a result of gas trapped in the casting during manufacture expanding and displacing the surface layer outward. Sufficient outward displacement created the cracks in the blister.

If the bracket was subject to impact or other stresses which created the failure, they were on the missing section or on the missing pump.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the recovered steering pump bracket, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The fracture surface which allowed separation of the pump bracket was not present for a length of time sufficient for it to accumulate debris or grime;
2. The many small cracks and blisters, and probably the fracture itself, were the result of thermal stresses which occurred as a result of the fire.



Possible failure of power steering pump bracket.



LLV#: 0213751
Location: Elkridge, Iowa
DOL: 8/26/2014

Trident Contract Number: 1605-015
Engine: 1990 2.5 Liter

DISCUSSION

All fire damage and fire patterns related to the involved vehicle showed that the fire originated at the blower motor located on the interior left of the vehicle. The resulting examination of the exemplar vehicle, LLV No. 3316299, also from the Davenport Post Office, revealed heat damage to the connection at the blower motor. There may be a maintenance issue with the type or rating of this connection.

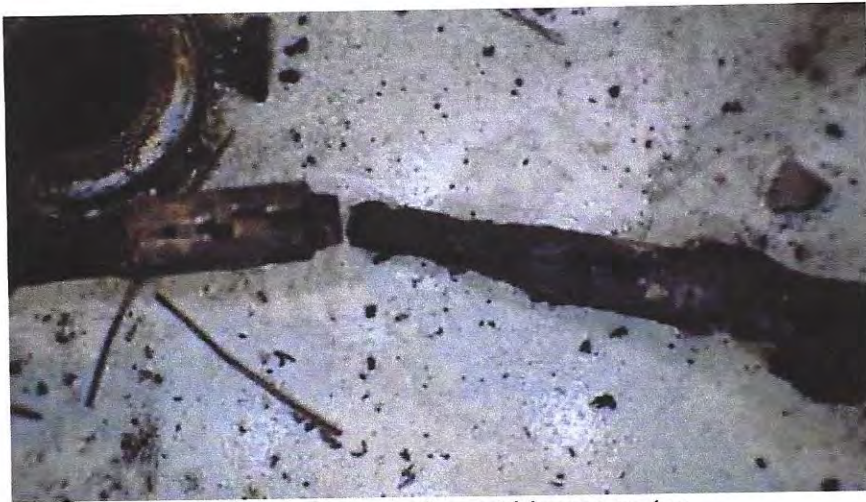
CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving United States Postal Vehicle No. 0213751, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. All fire damage and fire patterns revealed the fire to have originated in the passengers' compartment.
2. Examination of the passengers' compartment (area of origin) determined the fire originated at the blower motor located at the bulkhead on the left side of the vehicle.
3. After a complete investigation of this fire, Trident has determined the fire to have originated at the failure of the wire connection to the blower motor mounted on the left side interior bulkhead of the vehicle (point of origin).



View of blower wire connection showing electrical activity



Failure of connection at blower motor.



LLV#: 0208378
Location: Arlington, Texas
DOL: 8/26/2014

Trident Contract Number: 1605-016
Engine: 1990 2.5 Liter

DISCUSSION

The involved vehicle was last serviced by the Arlington Vehicle Maintenance Facility on June 11, 2014. The vehicle had routine preventive maintenance work completed. A combination of the constant use of stopping and starting, wear and tear caused the torque converter front pump seal to fail. This action caused a leakage of automatic transmission fluid on the hot surface of the exhaust and the undercarriage of the vehicle. The transmission fluid landing on the exhaust caused the white smoke. When the vehicle stopped moving, ignition of the fluid allowed fire to attack nearby fuel lines and other combustible items. Trident recommends that during the "A" and "B" inspections and after all engine repairs, this area be a part of the inspection. Furthermore, the operators should report any mechanical and/or electrical warnings to their supervisors.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving USPS LLV No. 0208378, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the underside of the vehicle in the center; specifically, near the front of the transmission under the bell housing.
2. The point of origin was determined to be the front of the transmission under the bell housing.
3. The mechanical failure of the fluid leak caused a hot surface ignition. The ignition source was fueled by the leaking transmission fluid, which was sprayed backwards onto the undercarriage of the LLV, and nearby fuel lines.
4. The cause of this fire is determined to be a mechanical failure, with the failure of the torque converter front pump seal causing transmission fluid to leak onto the exhaust pipe.



View of transmission bell housing leak.



View of point of origin.



LLV#: 0202278
Location: Owasso, Oklahoma
DOL: 8/29/2014

Trident Contract Number: 1605-017
Engine: 1990 2.5 Liter

DISCUSSION

The involved vehicle was last serviced by the Tulsa Vehicle Maintenance Facility on August 21, 2014. The vehicle was taken to the VMF for a transmission fluid smell. A combination of the constant use of stopping and starting, wear and tear, and possible improper mechanical diagnosis caused the rear main engine seal to fail. This action caused a leakage of engine motor oil onto the hot surface of the crossover exhaust and the undercarriage of the vehicle. The motor oil landing on the exhaust pipe caused visible smoke prior to the fire. When the vehicle stopped moving, the heat of the exhaust pipe rose, allowing ignition of the oil. Once the fire started, it attacked nearby fuel lines and other combustible items. Trident recommends that during the "A" and "B" inspections and after all engine repairs, this area be a part of the inspection. Furthermore, the operators should report any mechanical and/or electrical warnings/issues to their supervisors. The supervisors should consult the VMF before allowing further usage of the vehicle.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV No. 0202278, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be on the underside of the vehicle in the center; specifically, near the rear of the engine and the front of the transmission.
2. The point of origin was determined to be the crossover exhaust pipe underneath the rear of the engine and the front of the transmission.
3. The mechanical failure of the oil leak caused a hot surface ignition. The ignition source was fueled by the leaking rear main seal which sprayed oil backwards onto the undercarriage and exhaust of the LLV.
4. The cause of this fire is determined to be a mechanical failure, with the failure of the rear main engine seal causing motor oil to leak on to the exhaust pipe.



View of point of origin.



LLV#: 4306289
Location: Burton, Michigan
DOL: 9/19/2014

Trident Contract Number: 1605-018
Engine: 1994 2.2 Liter

DISCUSSION

After completing the interviews of involved parties and a complete examination of the vehicle, this vehicle was operated; after it was determined that it would accelerate poorly, was idling very rough, and was making a loud noise. The operation of the vehicle on two cylinders caused raw gasoline to be forced out of the tail pipe. This raw gasoline being pumped out of the exhaust pipe, accompanied by the broken exhaust tail pipe creating sparks while in motion, was determined to be the source of ignition.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of United States Postal Vehicle No. 4306289, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The vehicle was started and operated while not running properly.
2. The vehicle's tail pipe had been broken away from its mount for an extended period of time.
3. The broken tail pipe causing sparks was determined to be the source of ignition.
4. The bad coil causing raw gasoline to be forced out the tail pipe was determined to be the first fuel ignited.



View of coil



Vehicle being operated in poor condition with faulty coil and bent and broken tail pipe.



LLV#: 7202077
Location: Lovell, Wyoming
DOL: 9/20/2014

Trident Contract Number: 1605-019
Engine: 1987 2.5 Liter

DISCUSSION

The examination of the fire damage revealed wires burned in four separate locations of the vehicle. Three of the locations were under the hood involving ground wires. All locations indicated that the wires and or fuse connection overheated and caused a fire. The fire damaged nearby wiring and hoses. Determination of the cause of these failures is not possible at the time of this writing. A closer examination of the wiring needs to be conducted by an Electrical Engineer. These failures may have been caused by excessive current within associated electrical components and/or wiring.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving USPS LLV No. 7202077, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment; specifically, near the right side (driver's side) of the engine.
2. Four separate fire events occurred within this vehicle.
3. It is possible that all four of the events could be associated.
4. After a complete investigation of this fire loss, Trident has determined this fire to be undetermined in nature.
5. Any further information found involving this type of problem in other vehicles may lead to information as to the origin and cause of this fire.



Ground wire from Negative Battery terminal, overheated and shorted out.



Ground wire inside of the main engine wiring harness, heated up causing a short.



Ground wire for ECM overheated and shorted out.



LLV#: 0205244
Location: Clinton, Mississippi
DOL: 10/8/2014

Trident Contract Number: 1605-020
Engine: 1990 2.5 Liter

DISCUSSION

Trident's interview of the carrier, and examination of the vehicle currently used, determined that fuse jumpers are used to bypass non-working fuse holders in the fuse panel. The involved vehicle had a failure of one of these fuse jumpers. Other than smoke damage, there was no fire damage to the vehicle itself. The use of these fuse jumpers instead of replacing the wiring harness and fuse panel should only be done as a temporary measure.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of USPS LLV No. 0205244, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. A jumper fuse was used in place of the fuse panel fuse holder.
2. This fuse jumper failed, heating to ignition.



The use of a jumper fuse instead of fuse block replacement.



LLV#: 2219619
Location: Oxnard, California
DOL: 10/17/2014

Trident Contract Number: 1605-021
Engine: 1992 2.5 Liter

DISCUSSION

The examination of the fire damage revealed that the positive battery cable heated up and burned through, creating two pieces. Upon examining the pieces of the positive battery cable, the ends showed evidence of arcing. The cable heated from the inside, center, and broke apart. This indicated that the cable overheated and caused a fire. The fire damaged nearby wiring and hoses. A closer examination of the wiring needs to be conducted by an electrical engineer. This failure was caused by excessive current within the positive cable.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV No. 2219619, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment; specifically, near the right side (driver's side) of the engine.
2. The point of origin was determined to be the positive battery cable.
3. The mechanical failure of the starter caused the positive battery cable to over-current/heat. When the wire failed, it caused an arc which ignited nearby combustibles and fuel.
4. The cause of this fire is determined to be a mechanical failure. The failure of the starter, remaining engaged, caused a constant flow of current from the battery. This over-current produced heat.



View of arc damage to the positive battery cable.



LLV#: 8216650
Location: Bayshore, New York
DOL: 10/20/2014

Trident Contract Number: 1605-022
Engine: 1988 2.5 Liter

DISCUSSION

This fire will require further examination of the alternator by Trident's electrical engineer. Trident has requested and received the involved alternator from the Hicksville Vehicle Maintenance Facility. The examination will possibly determine if there was an electrical failure in one of the rectifiers in the alternator which would allow excessive amperage to be transmitted through the wire leading to the battery. This Trident case, as well as the vehicle fires involving case numbers 1605-023 and 1605-008, may be caused by a similar failure. This failure can be isolated with the installation of a fusible link in the wire leading from the alternator to the battery. There is already a fusible link installed on the ignition side of the alternator.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV No. 8216650, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. This fire originated at the right front of the engine compartment.
2. The missing section of the wire leading from the alternator to the battery is the probable failure point.
3. The failure of the wire leading from the alternator to the battery, with its close proximity to the transmission cooler lines and the possibility of the mesh sleeve being worn from the lines, leaves the plastic inner lining and combustible fluid inside as a catalyst for the fire.

Electrical Engineer Report

OBSERVATIONS

On December 17, 2014, [REDACTED], Electrical Engineer with Trident Engineering, examined the evidence removed from the above-described vehicle. This evidence consisted of a substantially burned alternator.

The rectifier/regulator assembly plate of the alternator is completely burned off. Protruding from the stator windings are 3 pairs of twisted winding wire ends, which supplied 3 phase power to the rectifier circuitry. These had been connected to the rectifiers on the rectifier/regulator assembly plate to allow full wave rectification of the 3 phase power. The missing rectifier/regulator assembly plate eliminated the possibility of making measurements of the rectifiers to determine semiconductor component failure.

CONCLUSIONS

Evenly overheated high current windings in the stator section of this alternator indicate that heating was internal to the alternator. This overcurrent condition was most likely the result of shorted electrical rectifiers on the rectifier assembly within the al-



ternator. It is the opinion of Trident Engineering that this alternator was most likely the source of the fire in this postal vehicle.

In preparing this report, Trident has been thorough and accurate and met the standards generally expected from members of the engineering profession and in accordance with our General Provisions. Trident reserves the right to revise its opinion if further information is discovered. By accepting delivery of this report, the recipient agrees that Trident shall not be liable for any special, indirect, incidental, or consequential loss or damage whatsoever.



Failure of wire leading from alternator to battery.



Comparison of inner and outer stator high current windings with partial removal of outer windings.



LLV#: 4313715
Location: Savannah, Georgia
DOL: 10/21/2014

Trident Contract Number: 1605-023
Engine: 1994 2.2 Liter

DISCUSSION

The examination of the fire damage revealed that the battery produced excessive heat and failed. This caused the insulation to related wires to burn away from the battery. The positive wire to the alternator was burned through, creating two pieces. Upon examining the pieces of the positive wire, the battery end had no insulation. The end connected to the alternator had insulation up to the point where the wire burned through. The ends of this wire showed heat damage and no evidence of arcing. A closer examination of the alternator needs to be conducted by an Electrical Engineer. This failure was caused by excessive current within the battery not being regulated.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV No. 4313715, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment; specifically, near the right side (driver's side) of the engine.
2. The point of origin was determined to be the battery.
3. The failure of the battery caused an overcurrent/heat. When the battery failed, it created a fire which ignited nearby combustibles and fuel.
4. The cause of this fire is determined to be a mechanical failure, with the failure of the battery thus causing an overcurrent. This overcurrent caused excessive heat.

Electrical Engineer Report

TESTING

The alternator was tested for an output terminal short to ground. This measurement resulted in resistances of approximately 20 ohms in either direction. This resistance measurement is consistent with other alternators tested by Trident.

Two of the rectifiers were disconnected from their coil windings to allow independent resistance checks of the semiconductor devices. These rectifiers measured 1200 ohms in both directions without supplying sufficient voltage to forward bias the rectifiers.

CONCLUSIONS

Visual observation and electrical testing of this alternator failed to isolate any electrical issues with this alternator.

In preparing this report, Trident has been thorough and accurate and met the standards generally expected from members of the engineering profession and in accordance with our General Provisions. Trident reserves the right to revise its opinion if



further information is discovered. By accepting delivery of this report, the recipient agrees that Trident shall not be liable for any special, indirect, incidental, or consequential loss or damage whatsoever.



View of area of origin.



LLV#: 9200323
Location: Macedonia, Ohio
DOL: 10/21/2014

Trident Contract Number: 1605-024
Engine: 1992 2.5 Liter

DISCUSSION

The examination of the fire damage revealed that the distributorless ignition system created excessive heat causing a crack in one of the coil packs. The overheated coil pack ignited the plastic housing of the distributorless ignition and caused a fire. The fire damaged nearby wiring. A closer examination of the distributorless ignition system needs to be conducted by an Electrical Engineer. This failure was caused by excessive current causing heat to ignite the plastic housing.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV No. 9200323, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment; specifically, near the right side (driver's side) of the engine.
2. The point of origin was determined to be the distributorless ignition system.
3. The failure of the distributorless ignition system caused it to produce an over-current/excessive heat situation. When the ignition system failed, it caused an arc which ignited nearby plastic combustibles.
4. The cause of this fire is determined to be a mechanical failure.



View of distributorless ignition coil cracked housing.



LLV#: 8204480
Location: San Juan, Puerto Rico
DOL: 11/21/2014

Trident Contract Number: 1605-025
Engine: 1988 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. Due to the flammability of the engine fluids and available fuels, combined with an extended extinguishment time, the fire consumed all available combustibles. The LLV has had problems starting in the past along with fuel leaks from the fuel pressure regulator.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV No. 8204480, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment. Specifically near the right side by the firewall.
2. The point of origin could not be determined do to the lack of information and severe fire damage.
3. After a complete investigation of this fire loss, Trident has determined this fire to be undetermined in nature.



View of right side engine compartment damage.



LLV#: 4310927
Location: Knoxville, Tennessee
DOL: 11/24/2014

Trident Contract Number: 1605-026
Engine: 1994 2.2 Liter

DISCUSSION

The involved vehicle had no record found of any recent or ongoing problems. The delay of the calling of 911 upon the first evidence of smoke and the gusting winds the day of the fire increased the extent of fire damage to the vehicle.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV No. 4310927, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. All fire damage to the involved vehicle showed the fire to have progressed from the front of the vehicle to the rear.
2. Examination of the engine compartment showed the fire originated on the left side of the engine and progressed toward the rear of the vehicle.
3. The area of origin could be determined as the left side of the Engine; however, due to the extent of fire damage to the area of origin, no point of origin could be determined.



View of left side of engine area of origin.



LLV#: 3302162
Location: Orange, California
DOL: 12/1/2014

Trident Contract Number: 1605-027
Engine: 2.5 Liter

DISCUSSION

The fire damage to this vehicle was similar to other vehicles that had a failure of the wire leading from the battery to the alternator. As noted in prior reports, the wire leading from the alternator to the battery should be equipped with a fusible link. A fusible link in this wire would reduce the number of fire related failures to this wire.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV #3302162, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The origin of this fire is located at the wiring from the positive battery terminal.
2. The failure of the wire leading from the alternator is the point of origin for this fire.
3. Examination of the alternator will likely provide the necessary information that a failure in the alternator will cause excessive amperage to flow to the battery.



View of point of origin wire leading from alternator to battery.



LLV#: 4309056
Location: Colona, Illinois
DOL: 12/8/2014

Trident Contract Number: 1605-028
Engine: 2.2 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the passenger's compartment. The fuse for the headlight switch was found severely damaged. The headlight switch was also found severely damaged. The headlight switch failed causing an over current. This failure was caused by excessive current causing heat to ignite the plastic housing.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV #4309056, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the passenger's compartment. Specifically the dash area on the interior.
2. The point of origin was determined to be the headlight switch.
3. The failure of the headlight switch caused it to produce an over current/excessive heat situation.
4. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of point of origin headlight switch.



LLV#: 1201998
Location: Danvers, Massachusetts
DOL: 12/8/2014

Trident Contract Number: 1605-029
Engine: 2.5 Liter

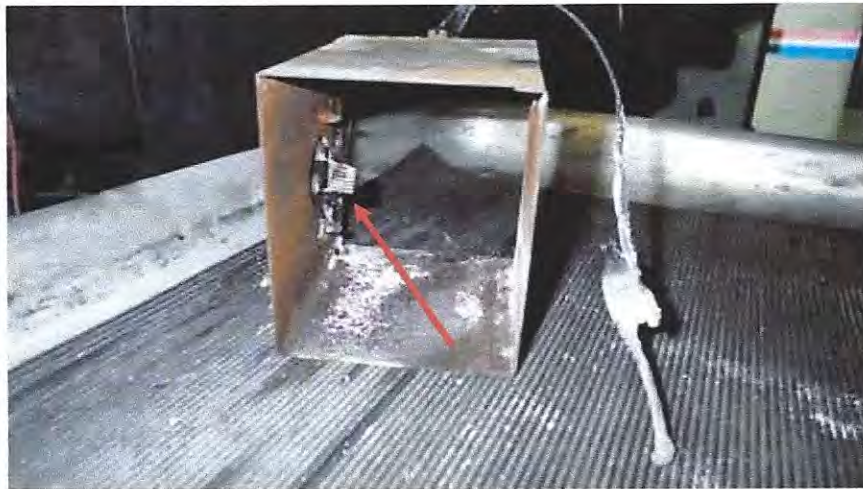
DISCUSSION

The examination of the fire damage revealed a fire occurred in the passenger's compartment. The heater blower motor along with the heating element was determined to be severely damaged. The heating element is mounted above the blower motor bird cage. The heating element (resistor coil) failed causing arcs which ignited the plastic fins within the enclosure. This failure was caused by excessive current causing heat to ignite the plastic fan fins.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV#1201998, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the passenger's compartment.
2. The point of origin was determined to be the heating element.
3. The failure of the heater element/coil caused it to produce arcs and ignite available combustibles.
4. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of heating element/point of origin.



LLV#: 4312035
Location: Springfield, Missouri
DOL: 12/15/2014

Trident Contract Number: 1605-030
Engine: 2.2 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The left side of the engine was determined to have severe damage. The broken power steering return line sprayed power steering fluid onto the heated exhaust manifold which caused white smoke/sizzling sounds. The power steering fluid reached its ignition temperature and caused a hot surface fire. This failure was caused by a broken serpentine belt which struck the power steering return line, damaging it.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV No. 4312035, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the exhaust manifold.
3. The failure of the serpentine belt caused it to break the power steering return line, spraying fluid over the hot exhaust manifold which ignited.
4. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



Close up view of broken P/S return line, point of origin.



LLV#: 0217775
Location: Lorain, Ohio
DOL: 1/5/2015

Trident Contract Number: 1605-031
Engine: 2.5 Liter

DISCUSSION

Trident's attempt to examine the loss location was not possible due to snow cover. The first fire noted by the carrier was located at the headlight switch. Examination of this area revealed no remains of the switch. The examination of the battery showed evidence of internal heating. This can be a result of overload. With the internal windings of the alternator being seized a failure of the alternator will need to be ruled out if possible.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV no. 0217775, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The first fire noted was at the headlight switch.
2. The alternator was seized indicating a possible failure.
3. The battery exhibited signs of internal heating.
4. The above information requires that the alternator be examined for possible failure.
5. The failure of the alternator can cause an overload of the electrical system that can cause a failure at the weakest point the overload encountered.
6. Trident had determined that this fire is electrical in nature with the first failure to be determined thru testing of the alternator.



View of alternator and associated wiring.



LLV#: 4311218
Location: Palm City, Florida
DOL: 1/6/2015

Trident Contract Number: 1605-032
Engine: 1994 2.2 Liter

DISCUSSION

The examination of the fire damage revealed that the fire occurred in the cowl area between the dash and firewall. The fire extended up from this area and spread to the passenger and engine compartments. The electronic control module (ECM) was severely damaged. The ECM is mounted below the interior plastic vent system. The ECM failed which created arcing which ignited the plastic vent system. The failure was caused by excessive current from the battery to the ECM causing heat to ignite the plastic.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 4311218, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the cowl area between the passenger and engine compartments.
2. The point of origin was determined to be the electronic control module.
3. The failure of the electronic control module caused it to produce arcs and ignite available combustibles.
4. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of point of origin.



LLV#: 9217781
Location: Kennesaw, Georgia
DOL: 1/8/2015

Trident Contract Number: 1605-033
Engine: 1989 2.5 Liter

DISCUSSION

Trident has examined the LLV no. 9217781 and the associated maintenance records. The origin of the fire was found to be at the fuel filter. Trident's observation that the lower connection on the filter displayed a clean burn, the fuel line not being connected to the filter, and no evidence of the connection being melted to the filter connector. This is an indicator that the noise heard by the carrier was the fuel line becoming dislodged from the filter. This would have caused the vehicle to stall. The attempts to restart the vehicle would have pumped raw gasoline directly onto the manifold causing ignition of the gasoline vapors.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire involving LLV no. 9217781, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The origin of the fire was at the fuel filter located on the left side of the engine.
2. The first fuel ignited would have been the gasoline pumped from the filter during restart attempts.
3. The evidence of the clean burn and lack of remains of the lower fuel line indicate the lower fuel line became disconnected from the fuel filter. The probable cause being improper installation of the fuel line.



View of fuel filter showing lower line not in place.



View of interior of lower connection on fuel filter; note clean burn.



LLV#: 0210750
Location: Minneapolis, Minnesota
DOL: 1/13/2015

Trident Contract Number: 1605-034
Engine: 1990 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended up from the distributor cap and into the passenger and engine compartments. The distributor and its components were severely damaged. The distributor failed which produced arcing that ignited nearby combustibles. This failure was caused by excessive current causing heat to ignite the plastic and wire insulation.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV #0210750, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the distributor.
3. The failure of the distributor caused it to produce arcs and ignite available combustibles.
4. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of the point of origin.



LLV#: 2211327
Location: Walnut Creek, California
DOL: 1/16/2015

Trident Contract Number: 1605-035
Engine: 1992 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended up from the distributorless ignition and into the engine and passenger compartments. The distributorless ignition system created excessive heat causing the coil pack to overheat. The overheated coil pack ignited the plastic housing of the distributorless ignition and caused the fire. The fire damaged nearby spark plug wires and other wiring.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 2211327, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the distributorless ignition system.
3. The failure of the distributorless ignition system caused it to produce an over current/excessive heat situation.
4. The failure of the distributorless ignition caused it to produce arcs and ignite available combustibles.
5. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of the point of origin.



LLV#: 1265078
Location: Grand Rapids, Michigan
DOL: 1/22/2015

Trident Contract Number: 1605-036
Engine: 1992 2.5 Liter

DISCUSSION

The fire damage to this vehicle was confined to the area around the headlight switch. The vehicle wiring was examined and determined to be in good condition with the exception of the exposed wiring in the engine compartment being covered with grease and grime. The examination of the headlight switch may determine if the breaker within the switch actuated.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV #1265078 Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The origin of this fire was determined to be at the headlight switch located on the left side of the dash in the driver compartment.
2. The associated wiring for the headlight switch was ruled out as a cause of the fire.
3. The point of origin for this fire was determined to be the headlight switch itself.
4. The nature of the failure for this switch is to be determined.



View of damage to switch post.



LLV#: 1269440
Location: Paris, Texas
DOL: 1/22/2015

Trident Contract Number: 1605-037
Engine: 1991 2.5 Liter

DISCUSSION

The examination of the fire damage revealed the fire occurred in the engine compartment. The fire extended from the exhaust manifold and into the engine and passenger compartments. The fuel filter was mounted on the front left side of the engine. The supply end of the filter faced the rear of the engine directly above the exhaust manifold. The fuel filter's supply end fitting was loose. The LLV had an odor of gasoline which was coming from the fuel filter. The leaking gasoline came in contact with the heated exhaust manifold causing a hot surface ignition and caused the fire.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV#1269440, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origins heat source was determined to be the exhaust manifold.
3. The leak from the fuel filter caused gasoline to spray on to the hot exhaust manifold.
4. The gasoline leaking or sprayed onto the heated exhaust manifold caused a hot surface ignition and ignited available combustibles.
5. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of the area where fuel filter was located.



View of fire patterns on fuel filter.



LLV#: 2210021
Location: Joliet, Illinois
DOL: 1/25/2015

Trident Contract Number: 1605-038
Engine: 1992 2.5 Liter

DISCUSSION

The fire involving LLV no. 2210021 was confined to the wire connection at the emergency brake. The fire had two potential sources of ignition. The first being the heater duct that was placed in close proximity to the connection at the emergency brake. The placement of the duct, that contained a wire support system wrapped in cloth, may have come in contact with exposed wire at the connection. The second possible cause being the failure at the battery cable that was associated with the ground wire failure. This failure may have caused an increase in amperage throughout the system and the connection at the emergency brake was the weakest point. The installation of the battery cable comes into question due to the close proximity of the speedometer cable and the wear point on the wire. This was found at the point it passed through the secure point located on the right side of the engine. The fact that there was no evidence of fire at the battery wire could be associated with the wire being new. The ignition temperature would be higher than if it had been a wire that had experienced thermal break down over an extended period of time. The other possibility is that there were two separate incidents with no possible determination if they are related.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV no. 2210021, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The point of origin for this event is the connector switch at the emergency brake.
2. The finding of the electrical activity on the main battery cable and speedometer cable may have been the cause of this fire, with the failure occurring at the electrical connection at the emergency brake, or there may be two separate issues with the electrical system.
3. With the above stated finding, Trident will hold this fire as undetermined in nature. It is not possible to determine which event occurred first or if there were two separate incidents.



View of fire damage to wire connector at emergency brake.



View of electrical activity on speedometer cable.



View of electrical activity on battery cable.



LLV#: 4311335
Location: West Chicago, Illinois
DOL: 1/28/2015

Trident Contract Number: 1605-039
Engine: 1994 2.2 Liter

DISCUSSION

With the obvious electrical activity involving the non-energized tan and light green wires, an electrical short may have occurred possibly involving the right-turn cancel spring that had become dislodged.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 4311335, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was located at the steering wheel.
2. The point of origin for this fire was the turn signal switch, located at the center of the steering wheel.
3. The first fuel ignited would have been the insulation on the available wiring.
4. The cause of this fire is being held as undetermined, due to the fact that the initial failure could not be determined due to the turn signal cancel spring not being in place.



View showing dis-assembly of steering column.



LLV#: 2213962
Location: Schuyler, Nebraska
DOL: 2/2/2015

Trident Contract Number: 1605-040
Engine: 1992 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment, specifically the left side. Due to the flammability of the engine fluids and available fuels, combined with an extended extinguishment time, the fire consumed all available combustibles.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 2213962, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment, specifically the left side of the engine.
2. The point of origin could not be determined due to severe fire damage and lack of information.
3. After a complete investigation of this fire loss, Trident has determined this fire to be undetermined in nature.



View of the point of origin.



LLV#: 0214850
Location: Huntington, New York
DOL: 2/3/2015

Trident Contract Number: 1605-041
Engine: 1992 2.5 Liter

DISCUSSION

All burn patterns and fire damage revealed that the fire progressed from the engine-transmission separator plate. The damage is an indicator of the transmission pump failing. This failure is possibly the result of the vehicle's transmission being alternated switched back and forth from reverse to drive in an attempt to rock the vehicle out of the snow and ice. Trident saw no record of transmission work being performed on the vehicle in the records it received.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire damage to LLV no. 0214850, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire is the transmission.
2. The point of origin for this fire is at the engine-transmission separator plate.
3. This failure would have resulted in the transmission fluid being atomized out onto the exhaust causing immediate ignition of the fluid.



Close up view of Transmission seal.



LLV#: 3316307
Location: Des Moines, Iowa
DOL: 2/9/2015

Trident Contract Number: 1605-042
Engine: 1993 2.2 Liter

DISCUSSION

As previously discussed, the failure occurred in the rheostat of the headlight switch. A possible cause for this is a short circuit in the dash lighting. A short in the horn/turn signal assembly is a possible cause as well.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss to LLV no. 3316307, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The fire originated in the rheostat of the headlight switch.
2. There are no records of recent replacement of this switch.
3. The probable causes for this occurrence are a short circuit within the dash lighting, turn signal assembly, and associated wiring.



View of head light switch.



LLV#: 8213251
Location: Omaha, Nebraska
DOL: 2/10/2015

Trident Contract Number: 1605-043
Engine: 1988 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended from the carburetor and into the engine compartment. The carburetor had fuel moving through the system when the "back fire" occurred, igniting the unburned fuel, causing a quick flame. The fire damaged a nearby wire loom and wiring, along with soot damage to the hood and cowl areas.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 8213251, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the carburetor.
3. The failure of the engine to run properly caused a back fire, which produced a flame that ignited nearby fuel.
4. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of the point of origin and patterns.



LLV#: 0205550
Location: Tonawanda, New York
DOL: 2/9/2015

Trident Contract Number: 1605-044
Engine: 1990 2.5 Liter

DISCUSSION

The examination of the fire damage revealed, a fire occurred in the passenger compartment. The fire extended up from the lower right side of the dash, causing damage to the instrument cluster. The instrument cluster suffered heat and smoke damage. The fire damaged an area of the dash, in which no competent ignition sources were found. No evidence was found that indicates the fire was intentionally set, however, this cannot be completely ruled out. Human error or involvement with this fire cannot be completely ruled out. One scenario or hypothesis of a competent ignition source would be a torch flame. If the torch was on and sat on the floor of the vehicle, after the operator was distracted, it would have caused this damage. The only employee who used a competent ignition source was custodial worker, [REDACTED]-[REDACTED]. [REDACTED] called in sick on both days interviews were attempted.

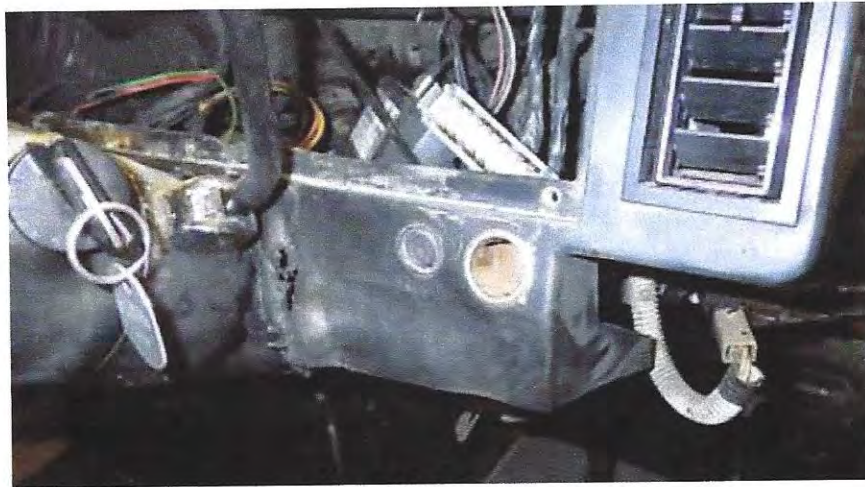
CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 0205550, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the passenger compartment.
2. The point of origin was determined to be the right lower dash area.
3. After a complete investigation of this fire loss, and the lack of information from the Custodial worker, Trident has determined this fire to be undetermined in nature.



View of point of origin.



View of fire patterns.



LLV#: 33006533
Location: Sheboygan, Wisconsin
DOL: 2/13/15

Trident Contract Number: 1605-045
Engine: 1993 2.5 Liter

DISCUSSION

With the report of [REDACTED] at the location of the first fire scene and the fire damage localized at the air cleaner, this fire is possibly the result of a failure of the crank sensor. There was also no record found of recent crank sensor replacement.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV no. 33006533, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The origin of this fire is within the air cleaner assembly.
2. The probable cause is a failure of the crank sensor causing the reported back fire and inability to start the vehicle.



View of air cleaner damage.



LLV#: 4305417
Location: Germantown, Tennessee
DOL: 2/17/2015

Trident Contract Number: 1605-046
Engine: 1994 2.2 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended from the exhaust manifold and into the engine and passenger compartments. Witness accounts report hearing a noise and losing power steering. Shortly after, the witness reported seeing white smoke. The power steering pump/line sprayed/atomized fluid over the heated exhaust manifold, causing a hot surface ignition and creating the fire.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 1269440, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the exhaust manifold.
3. A leak from the power steering pump caused power steering fluid to spray on to the hot exhaust manifold.
4. The fluid leaking or sprayed onto the heated exhaust manifold caused a hot surface ignition and ignite available combustibles.
5. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of the point of origin and oily deposits on exhaust manifold.



LLV#: 3317050
Location: Muscle Shoals, Alabama
DOL: 2/20/2015

Trident Contract Number: 1605-047
Engine: 1994 2.2 Liter

DISCUSSION

As previously discussed, the failure occurred in the rheostat of the headlight switch. The possible causes for this to occur are a short circuit in the dash lighting and, possibly a short in the horn/turn signal assembly.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV no. 3317050 , Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The fire originated in the rheostat of the headlight switch.
2. There are no records of recent replacement of this switch.
3. The probable causes for this occurrence are a short circuit within the dash lighting, turn signal assembly and associated wiring.



View of headlight switch.



LLV#: 4302116
Location: Lexington, Kentucky
DOL: 2/23/2015

Trident Contract Number: 1605-048
Engine: 1994 2.2 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment, specifically the left side. Due to the flammability of the engine fluids and available fuels, combined with an extended extinguishment time, the fire consumed all available combustibles.

The Postal Carrier told three different variations of the above events to Fire Department, USPS Supervisors, and Trident. The carrier was never clear as to taking the key out of the ignition or putting the key in the ignition.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 4302116, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin could not be determined, due to the lack of information and severe fire damage.
3. After a complete investigation of this fire loss, Trident has determined this fire to be undetermined in nature.



View of the engine compartment fire patterns.



LLV#: 1201260
Location: Land O' Lakes, Florida
DOL: 2/25/2015

Trident Contract Number: 1605-049
Engine: 1991 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment, specifically underneath and the left side. Due to the flammability of the engine fluids and available fuels, combined with an extended extinguishment time, the fire consumed all available combustibles.

The technician called 911 and was switched to several different agencies because of the area code of his cell phone.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 1201260, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin could not be determined due to the lack of information and severe fire damage.
3. After a complete investigation of this fire loss, Trident has determined this fire to be undetermined in nature.



View of the fire damage to engine compartment.



LLV#: 3315680
Location: Grove City, Ohio
DOL: 3/2/2015

Trident Contract Number: 1605-050
Engine: 1993 2.2 Liter

DISCUSSION

Investigation of this fire determined the point of origin to be the blower motor however, the initial failure within the motor cannot be determined due to the complete destruction by fire of the interior workings.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV no. 3315680, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The origin of this fire was at the left side of the bulkhead.
2. The point of origin for this fire is located at the heater blower.
3. The cause of this fire is undetermined due to the complete destruction of the blower motor by fire.



View of back side of blower.



LLV#: 9205111
Location: Wilkes Barre, Pennsylvania
DOL: 3/9/2015

Trident Contract Number: 1605-051
Engine: 1989 2.5 Liter

DISCUSSION

The origin of this fire was determined to be at the turn signal switch assembly within the steering column. The extensive damage to this assembly prevented a complete examination of the unit. The first failure within this unit could not be determined.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss to LLV no. 9205111, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The origin of this fire was within the turn signal switch assembly.
2. The right turn cancel spring was found to not be in place with the most extensive damage at the point it was found.
3. With the complete destruction by fire of the unit and the inability to remove the unit for examination, Trident will hold this fire as undetermined in nature with the first failure within the unit not found.



View of turn signal switch remains.



LLV#: 8201973
Location: Sugarland, Texas
DOL: 3/6/2015

Trident Contract Number: 1605-052
Engine: 1988 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment, specifically underneath and the left side. Due to the flammability/combustibility of the engine fluids and available fuels, combined with an extended extinguishment time, the fire consumed all available combustibles.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 8201973, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin could not be determined do to the lack of information and severe fire damage.
3. After a complete investigation of this fire loss, Trident has determined this fire to be undetermined in nature.



View of the fire damage to engine compartment.



LLV#: 4307032
Location: Valparaiso, Indiana
DOL: 3/11/2015

Trident Contract Number: 1605-053
Engine: 1993 2.2 Liter

DISCUSSION

After a complete examination of this vehicle and components and interview of the operator, Trident has learned that the fire extended from the operator compartment into the engine compartment. With the operator observations, the origin of this fire is found to be the interior of the vehicle under the dash. All wiring and components in this area are extensively damaged by fire, prohibiting the determination of the exact first failure. The most probable cause of this fire is electrical in nature.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis the fire involving LLV no. 4307032, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The origin of this fire is under the dash.
2. The exact point of origin under the dash cannot be determined.
3. The most probable cause for this fire is electrical in nature.



View of dash and steering column area.



LLV#: 1261758
Location: College Station, Texas
DOL: 3/13/2015

Trident Contract Number: 1605-054
Engine: 1991 2.5 Liter

DISCUSSION

The examination of the fire damage revealed wires burned in four separate locations of the vehicle. Three of the locations were under the hood involving ground wires. The fourth location was the positive connection to the starter. The positive cable became disconnected from the starter and made contact with the frame. The frame of the vehicle was grounded. All locations indicated the wires and or fuse connection overheated and caused a fire. Determination of the cause of these failures was not possible at the time of this writing. These failures may have been caused by excessive current within associated electrical components and/or wiring.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 1261758, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the passenger compartment.
2. Four separate fire events occurred within this vehicle.
3. It is possible that all four of the events could be associated with a grounding problem.
4. After a complete investigation of this fire loss, Trident has determined this fire to be undetermined in nature.
5. Any further information found involving this type of problem in other vehicles may lead to information as to the origin and cause of this fire.



View of damage near fuse block.



View of the starter electrical arc.



LLV#: 4304806
Location: Coralville, Iowa
DOL: 3/16/2015

Trident Contract Number: 1605-055
Engine: 1994 2.2 Liter

DISCUSSION

After a complete investigation of this fire, all fire damage and burn patterns indicate the fire originated on the right side top of the engine. The top of the manifold showed evidence of being torn away with the front of the manifold showing evidence of being broken away. This damage could possibly have resulted in the manifold having been damaged previously and the resulting backfiring of the vehicle finally dislodged it. This backfiring issue had been addressed without correction several times according to [REDACTED]. The resulting breaking away of the manifold would have created an open path for fuel and vapors to enter the engine compartment.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV no. 4304806, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire is on the top and right of the engine.
2. The manifold appeared to have broken away from its mounts.
3. The extensive fire damage to the remainder of the engine compartment deterred the possibility of the exact cause of this fire.



Proper placement of components.



View of damage to intake (note front and mounting bolt).



LLV#: 4310015
Location: Tomball, Texas
DOL: 3/19/2015

Trident Contract Number: 1605-056
Engine: 1994 2.2 Liter

DISCUSSION

The examination of the fire damage revealed that a fire occurred in the engine compartment, specifically on the left side. Due to the flammability/combustibility of the engine fluids and available fuels, the damage sustained was severe.

A possible hypothesis for the cause of the fire may be the result of a hot surface ignition. There was evidence of oily residue spots over the engine parts on the left side. It should be noted the power steering lines were not in place and were burned away. There was no evidence of an oil leak in the front of the engine.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 4310015, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin could not be determined due to the lack of information and severe fire damage.
3. A possible hypothesis for the cause of the fire was noted in the above discussion section.
4. After a complete investigation of this fire loss, Trident has determined this fire to be undetermined in nature.



View of the left side of engine area of origin.



LLV#: 4306756
Location: Roanoke, Virginia
DOL: 3/21/2015

Trident Contract Number: 1605-057
Engine: 1994 2.2 Liter

DISCUSSION

The examination of the fire damage revealed that a fire occurred in the engine compartment. The fire extended from the exhaust manifold and into the engine and passenger compartments. Witness accounts report hearing a noise and losing power steering. Shortly after, the witness reported seeing black smoke. The power steering pump/line sprayed/atomized fluid over the heated exhaust manifold, causing a hot surface ignition and creating the fire.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 4306756, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the exhaust manifold.
3. A leak from the power steering pump caused power steering fluid to spray on to the hot exhaust manifold.
4. The fluid leaked or sprayed onto the heated exhaust manifold caused a hot surface ignition and ignited available combustibles.
5. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of the left side point of origin.



LLV#: 9211761
Location: Colorado Springs, Colorado
DOL: 3/28/2015

Trident Contract Number: 1605-058
Engine: 1989 2.5 Liter

DISCUSSION

Examination of fire damage to this vehicle found the longest duration of burn occurred on the left front of the engine compartment. At this point, the power steering pump was found missing with extensive damage to the pump mounting bracket. As stated a search of the vehicle and the loss location failed to discover the power steering pump. With the missing pump in the area of origin, it is probable it was involved in the initial failure, however, without the unit to examine it is not possible to determine the first failure.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire involving LLV no. 9211761, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin is the left front of the engine compartment.
2. The power steering pump was not found in place.
3. The mounting bracket for the power steering pump revealed extensive heat damage.
4. With the missing component in the area of origin an exact point of origin cannot be determined.



View showing power steering pump not in place.



LLV#: 1268278
Location: Harmony, Pennsylvania
DOL: 3/10/2015

Trident Contract Number: 1605-059
Engine: 1991 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment, specifically on the left side, closest to the firewall.

A possible hypothesis for the cause of the fire may be the result of an electrical failure. The fact the heater blower motor was not working properly and would work intermittently when hitting bumps would indicate a short in the wiring. Also, the blower motor stopped working prior to the fire starting.

An electrical short behind the dash or heater blower motor could not be ruled out as a possible ignition scenario. It was reported that the blower motor worked on one speed and the lights also flickered after the blower motor stopped working. This along with an odor of electrical wires burning would support this scenario.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 1268278, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin could not be determined do to the lack of information and severe fire damage.
3. A possible hypothesis for the cause of the fire was noted in the above discussion section.
4. Because there is more than one possible hypothesis, the cause of the fire must be listed as undetermined.



View of left side damage Area of Origin.



LLV#: 0201439
Location: St. George, Utah
DOL: 4/21/2015

Trident Contract Number: 1605-060
Engine: 1990 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment, specifically the left side. Due to the flammability/combustibility of the engine fluids and available fuels, combined with an extended extinguishment time, the fire consumed all available combustibles in this area.

A possible hypothesis for the cause of the fire may be the result of a hot surface ignition. The fact that the carrier smelled gasoline, combined with a fluid trail, would indicate a gasoline leak. Also the fuel filter and broken pipe recovered at the scene and maintained by USPS staff, would further corroborate the above facts.

A fuel leak with the filter mounted on the front of the engine would spray gasoline on to the hot exhaust manifold. This along with an odor of gasoline would support this scenario.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 0201439, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin could not be determined due to the lack of information and the severe fire damage.
3. A possible hypothesis for the cause of the fire was noted in the above discussion section.
4. Because there is more than one possible hypothesis, the cause of the fire must be listed as undetermined.



View of fuel filter break.



Left side view of vehicle.



LLV#: 7203534
Location: Portageville, Missouri
DOL: 4/16/2015

Trident Contract Number: 1605-061
Engine: 1987 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment, specifically the left side.

A hypothesis for the cause of the fire may be the result of a hot surface ignition. The fact that the carrier smelled gasoline would indicate a possible gasoline leak. Also the fuel filter having a loose fitting would further corroborate the above facts.

A fuel leak with the filter mounted on the rear of the engine would spray gasoline over the hot exhaust manifold. This along with an odor of gasoline would support this scenario.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 7203534, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the fuel filter.
3. A possible hypothesis for the cause of the fire was noted in the above discussion section.



View of fuel filter leak point.



LLV#: 33190091
Location: Tipp City, Ohio
DOL: 4/22/2015

Trident Contract Number: 1605-062
Engine: 1993 2.2 Liter

DISCUSSION

After a complete examination of this vehicle, the point of origin was determined to be the battery cable coming in contact with the manifold on the left side of the engine. The probable cause of this contact would be improper routing of the cable during maintenance.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis LLV no. 3319091, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin is the left side of the engine.
2. The point of origin is the battery cable at the top of the manifold.
3. The contact of the battery cable with the manifold melted away the insulation allowing the exposed wire to contact the manifold and produce electrical arcing.
4. This arcing continued until the cable severed and the vehicle stalled.



View of opposite side of battery cable fused to manifold.



Close up view of battery cable that had been fused to manifold.



LLV#: 7203596
Location: Wyncote, Pennsylvania
DOL: 4/21/2015

Trident Contract Number: 1605-063
Engine: 1987 2.5 Liter

DISCUSSION

All the fire damage to this vehicle showed the fire originated at the fuse block. The fuse block and attached wiring had been consumed by fire. With the fire damage it will not be possible to determine the first failure, however, the fuse block and associated wiring was at the point of origin.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV no. 72033596, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The origin of this fire is at the location of the fuse block.
2. The fuse block and associated wiring had been consumed by fire.
3. The first failure at the fuse block cannot be determined.
4. With the complete destruction of the fuse block and first failure not found. This fire must remain undetermined in nature.



View of fuse block location and damage to wiring.



LLV#: 0201279
Location: Columbia, Missouri
DOL: 4/30/2015

Trident Contract Number: 1605-064
Engine: 1990 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. Due to the flammability of the engine fluids and available fuels, combined with an extended extinguishment time, the fire consumed all available combustibles.

A possible hypothesis for the cause of the fire may be the result of an electrical issue with the starter or related wiring. The fact that the carrier heard sparking noises and smelled an odor of electrical burning prior to the vehicle shutting down. This would indicate an electrical event occurring within the engine compartment. Also, when the vehicle was picked up and driven, flickering sparks were observed from under the vehicle, prior to the fire. When the fire occurred, the starter was damaged. Maintenance records indicated that the starter and engine were recently replaced. The above facts would support this scenario.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 0201279, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin could not be determined do to the lack of information and severe fire damage.
3. A possible hypothesis for the cause of the fire was noted in the above discussion section.
4. Because there is more than one possible hypothesis, the cause of the fire must be listed as undetermined.



View of undercarriage and starter damage.



LLV#: 0211417
Location: Corpus Christi, Texas
DOL: 4/20/2015

Trident Contract Number: 1605-065
Engine: 1990 2.5 Liter

DISCUSSION

The examination of the fire damage revealed that a fire occurred in the engine compartment. The fire extended from the carburetor/CNG system and into the engine compartment. The carburetor had fuel in the injection system when a "back fire" occurred, igniting the unburned fuel causing a flame. The fire damaged nearby combustibles, wire loom, wiring, and some plastics, along with fire damage to the hood and cowl areas.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no. 0211417, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the carburetor.
3. The failure of the engine to run properly caused a back fire, which produced a flame that ignited nearby fuel.
4. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of point of origin.



LLV#: 8201144
Location: Akron, Ohio
DOL: 5/12/2015

Trident Contract Number: 1605-066
Engine: 1988 2.5 Liter

DISCUSSION

All fire patterns and damage assessment to this vehicle, indicate that the fire originated at the headlight switch. Trident learned that this switch is not only repeatedly used to turn on and off the headlights but is also used repeatedly to turn the dome light on and off during low light conditions by the carrier to read addresses on packages. Trident has also learned from several maintenance facilities that the headlight switch has a high rate of failure and replacement. Possible solutions to reduce the repeated use of this switch would be to separate the dome light operation from this switch and or the elimination of this switch with the instillation of automatic headlights with day time running lights. The latter being an acceptable solution for new vehicles.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV no. 8201144, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire is the dash to the left of the steering column.
2. The point of origin for this fire is the location of the headlight switch.
3. The headlight switch will be examined for a possible cause of failure of the switch.



View of headlight switch remains.



LLV#: 1263292
Location: Escondido, California
DOL: 5/12/2015

Trident Contract Number: 1605-067
Engine: 1991 2.5 Liter

DISCUSSION

The origin for this fire is determined to be at the top of the engine at the rear two plug wires. The first fuel ignited would have been the available combustible fluids in this area. With the destruction of the plug wires, no evidence of arc or spark was noted. It is a probable hypothesis that a failure of one or both of these plug wires ignited available combustibles on the engine. This failure would also explain [REDACTED] report that it seemed the vehicle shut down prior to him turning the key to the off position. It should also be noted that the replacement three times within a year of the spark plugs and no replacement of the plug wires, an ongoing minor failure of the plug wires may have caused damage to the spark plugs.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire involving LLV no. 1263292, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin is the top of the engine at the rear.
2. The point of origin is determined to be at the location of the plug wires in this area.
3. With the destruction of the plug wires, no evidence of failure could be found, causing this fire to remain undetermined in nature.



Point of origin.



Plug wire damage.



LLV#: 3313348
Location: Marietta, Georgia
DOL: 5/6/2015

Trident Contract Number: 1605-068
Engine: 1993 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. Due to the flammability/combustibility of the engine fluids and available fuels, combined with an extended extinguishment time, the fire consumed all available combustibles in this area and extended to the passenger and cargo compartments.

A possible hypothesis for the cause of the fire may be the result of a hot surface ignition. The fact that the fuel filter supply line was found loose, combined with fire patterns would indicate a gasoline leak. Also the information from the VMF, which the fuel filters connections are vibrating loose, would further corroborate the above facts. The LLV was also serviced 7 days prior to the fire.

A fuel leak with the filter mounted to the engine would spray gasoline on to the hot exhaust manifold.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV no.3313348, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin could not be determined do to the lack of information and the severe fire damage.
3. A possible hypothesis for the cause of the fire was noted in the above discussion section.
4. Because there is more than one possible hypothesis, the cause of the fire must be listed as undetermined.



View of the engine compartment damage.



LLV#: 8209449
Location: South Haven, Michigan
DOL: 5/18/2015

Trident Contract Number: 1605-069
Engine: 1988 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the passenger's compartment. The headlight switch was also found severely damaged. The headlight switch failed, causing an over current. This failure was caused by excessive current, causing heat to ignite the plastic housing and wire insulation.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV, no. 8209449, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the passenger's compartment, specifically the dash area on the interior.
2. The point of origin was determined to be the headlight switch.
3. The failure of the headlight switch caused it to produce an over current/excessive heat situation.
4. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of the headlight switch point of origin.



LLV#: 2219759
Location: Edison, New Jersey
DOL: 8/26/2014

Trident Contract Number: 1605-070
Engine: 1992 2.5 Liter

DISCUSSION

After a complete examination of all fire damage and patterns, Trident has concluded that this fire originated at the fuel line leading from the throttle body. This line had no record of replacement. With the damage to the fuel line, Trident cannot conclude if the line placement was involved (e.g. too close to manifold or a failure of the line occurred).

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV no. 2219759, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire is the left side of the engine compartment.
2. The point of origin is determined to be the fuel line leading from the throttle body.
3. The carrier reported he smelled gasoline then attempted to start the vehicle.
4. Trident cannot determine if there was a failure of the fuel line, due to being too close to the manifold, or if the line failed due to age and wear.



View of length of missing fuel line.



View of distance of fuel line connection to manifold.



LLV#: 0207891

**Location: Wheeling, West Virginia
5/26/2015**

Trident Contract Number: 1605-071

Engine: 1990 2.5 Liter

DISCUSSION

After a complete investigation into this fire loss, Trident has concluded that the fire originated at the toggle switch for the cargo light. This switch is located on the right side of the dash, above the emergency brake. The exact failure of this switch cannot be determined due to the extensive damage to the switch. Examination of the available maintenance records do not show any replacement of this switch either recent or past. This failure is probably due to the age and use of the switch.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire involving LLV, No. 0207891, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin is the right side of the dash.
2. The point of origin is determined to be at the cargo light toggle switch.
3. The cause of this fire is determined to be a failure of the cargo light switch.



View of cargo light switch.



View of cargo light switch.



LLV#: 0200224
Location: Phoenix, Arizona
DOL: 5/29/2015

Trident Contract Number: 1605-072
Engine: 1990 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended from the exhaust manifold and into the engine and passenger compartments. Witness accounts report seeing dripping flames on the left side of the LLV as it was being driven. Shortly after the LLV stopped, it burst into flames. The pressurized rubber fuel line was mounted less than 1 inch from the heated exhaust manifold. This would cause damage to the line and cause it to spray/atomized gasoline over the heated exhaust manifold, causing a hot surface ignition, and creating the fire.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV, No. 0200224, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the exhaust manifold.
3. A leak from the return fuel line caused gasoline to spray onto the hot exhaust manifold.
4. The gasoline sprayed onto the heated exhaust manifold causing a hot surface ignition and igniting available combustibles.
5. The return fuel line was mounted too close to a heat source.



View of the point of origin.



View of the point of origin showing fuel line distance from heat source.



LLV#: 4314889
Location: Douglasville, Georgia
DOL: 5/30/2015

Trident Contract Number: 1605-073
Engine: 1988 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment.

The fire was contained to the engine compartment specifically to the left side. The positive battery cable was not properly clamped to the oil pan. The cable was laying on the motor mount and frame. The insulation on the cable rubbed away and came in contact with the motor mount causing an arc. The arc ignited the nearby insulation and wire loom.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV #4314889, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was identified as the positive battery cable near the starter.
3. The positive cable was in direct contact with the metal motor mount.
4. There is evidence of an arc occurring at the motor mount causing the cable insulation and wire loom to ignite the available combustibles.
5. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of positive cable pinched.



View of positive cable fault.



LLV#: 8214320
Location: Plantation, Florida
DOL: 6/3/2015

Trident Contract Number: 1605-074
Engine: 1988 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire was contained to the engine compartment, specifically to the right side. Witness accounts report seeing dripping flames from under the engine of the LLV. The transmission coolant line was lying on top of the wire from the alternator to the positive battery terminal. The wire was tight, due to the weight of the hose and fluid.

This caused friction, causing damage to the line and spray transmission fluid over the heated wire, causing an arc igniting the fluid and insulation.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV, No. 8214320, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the positive battery wire.
3. A leak from the transmission coolant line caused transmission fluid to spray onto the heated wire.
4. The transmission fluid sprayed onto the heated wire, causing it to arc and ignite available combustibles.
5. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of hole in transmission line.



LLV#: 7202713
Location: Battle Ground, Washington
DOL: 6/5/2015

Trident Contract Number: 1605-075
Engine: 1987 2.5 Liter

DISCUSSION

The most probable cause of this fire is a failure of the female connector for the return fuel line. This failure would explain the evidence of smoke during acceleration and braking as these two points would be when the most fuel is being transferred through the return line. With no evidence of replacement of the throttle body, it is possible that this is original equipment had exceeded its life span.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire involving LLV, No. 7202713, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. Trident has determined the area of origin for this fire to be the top right side of the engine.
2. Trident has also concluded that the point of origin is the right side of the throttle body.
3. With the information gathered, the probable cause is a failure of the female connection, attached to the throttle.
4. The location of the point of origin leaves the exact source of ignition undetermined. However, the probable source is the fuel from the return line igniting on the hot surface of the engine.
5. The continued operation of this vehicle after an operational problem noted, contributed to the ignition.



View of fuel return line that was connected to throttle body.



Close-up view of fuel line return area connection showing separation.



LLV#: 3306905
Location: Anthem, Arizona
DOL: 6/11/2015

Trident Contract Number: 1605-076
Engine: 1993 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended from the exhaust manifold and into the engine and passenger compartments. Witness accounts reported seeing fluid on roadway and a vehicle smoking. After a short period of time, they observed flames on left side of the LLV. The fuel filter with a loose supply line would spray atomized gasoline over the heated exhaust manifold, causing a hot surface ignition and creating the fire.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV, No. 3306905, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the exhaust manifold.
3. A leak from the fuel filter supply line caused gasoline to spray onto the hot exhaust manifold.
4. The gasoline sprayed onto the heated exhaust manifold caused a hot surface ignition and ignited available combustibles.
5. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of the point of origin.



View of the point of origin.



LLV#: 3313214
Location: Green Bay, Wisconsin
DOL: 6/13/2015

Trident Contract Number: 1605-077
Engine: 1993 2.5 Liter

DISCUSSION

After evaluation of all information available Trident has concluded that the involved vehicle was being operated in a mechanically unreliable condition at the time of the fire. Trident determined through operator interview the vehicle was not operating properly at the time of initial startup and the vehicle was continually operated until the fire occurred.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire involving LLV, No. 3313214, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. Trident concluded that the most probable cause for this fire is that the oil fill cap was not in place at the time of operation.
2. This would have caused the oil to be expelled out through the opening and to have ignited on the hot surface of the exhaust manifold and engine itself.
3. This would also explain the lifter tapping sound due to low oil pressure from oil fill cap not being in place.



View showing oil fill cap.



LLV#: 2214886
Location: Westminster, Maryland
DOL: 6/13/2015

Trident Contract Number: 1605-078
Engine: 1992 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended from the exhaust manifold to the valve cover area. The fire was contained to the engine compartment area. Witness accounts reported seeing no oil filler cap and a bottle of oil sitting on the engine, prior to the fire. When the vehicle was driven back to the branch, where it stalled out, it began smoking. After a short period of time, flames were observed on left side of the LLV. The oil leaking over the heated exhaust manifold caused a hot surface ignition, creating the fire.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV No. 2214886, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the exhaust manifold.
3. There was no oil filler cap, and there was a bottle of oil sitting on the hot exhaust manifold.
4. The oil leaking onto the heated exhaust manifold caused a hot surface ignition and the ignition of available combustibles.
5. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of the point of origin.



LLV#: 8215434
Location: Manitowoc, Wisconsin
DOL: 6/30/2015

Trident Contract Number: 1605-079
Engine: 1988 2.5 Liter

DISCUSSION

With the observations of improper mounting of the fuel line, fuel filter and fuel filter connections, Trident concludes that this fire was caused by a fuel leak from either the fuel filter connections or unsecured fuel lines.

The continued operation of this vehicle with a known fuel leak after first detected by carrier would result in the ignition of the leaking fuel contacting the heated exhaust manifold.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV #8215434, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The origin of this fire is the left side of the engine.
2. The gas from the fuel filter and or associated lines coming in contact with the heated exhaust manifold is the first fuel ignited.
3. This gas leak being the result of the fuel filter and or associated fuel line installation problems is the cause of this fire.
4. The point of first failure cannot be determined due to multiple installation problems determined with the fuel filter and associated lines.



View of fuel filter mounting.



View of where threads were located in connection.



LLV#: 1257989
Location: Onalaska, Wisconsin
DOL: 7/6/2015

Trident Contract Number: 1605-080
Engine: 1991 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. Due to the flammability/combustibility of the engine fluids and available fuels, combined with an extended extinguishment time, the fire consumed all available combustibles in this area and extended to the passenger and cargo compartments.

A possible hypothesis for the cause of the fire may be the result of a hot surface ignition. The fact that the fuel filter supply line was found loose, combined with fire patterns would indicate a gasoline leak. Also information from the VMF, which revealed that the fuel filters connections are vibrating loose, would further corroborate the above facts. The LLV was also serviced 7 days prior to the fire and a loose fuel line was not documented.

A fuel leak with the filter mounted to the engine would spray gasoline on to the hot exhaust manifold.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV, No. 1257989, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin could not be determined do to the lack of information and the severe fire damage.
3. A possible hypothesis for the cause of the fire was noted in the above discussion section.
4. Because there is more than one possible hypothesis, the cause of the fire must be listed as undetermined.



View of the left side fire damage.



LLV#: 9210958
Location: Monsey, New York
DOL: 7/11/2015

Trident Contract Number: 1605-081
Engine: 1990 2.5 Liter

DISCUSSION

After a complete investigation of this fire loss, Trident is unable to determine the first failure, leading to this fire loss. The carrier reported black smoke from the vehicle when 911 was notified and a 911 response time of several minutes. The damage to the components within the engine compartment indicated a long duration fire.

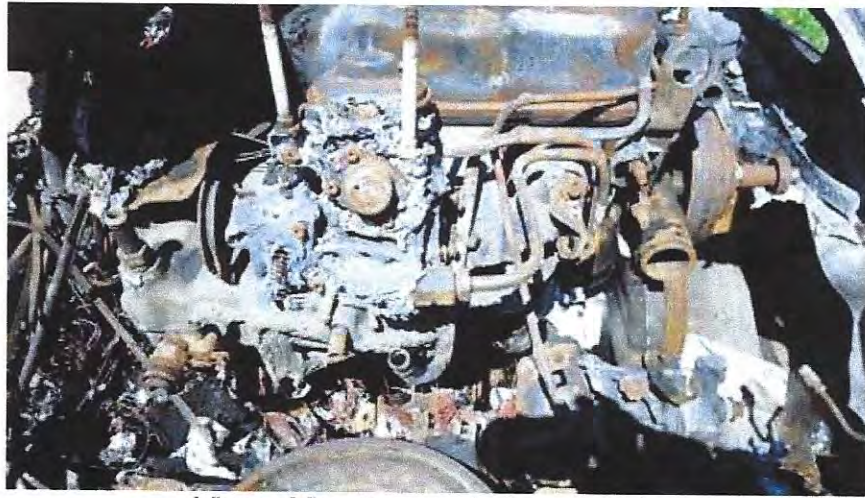
CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV No. 9210958, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. Noted fire damage revealed the area of origin to be the right side of the engine.
2. With the complete consumption of components by fire within the area of origin, a determination of the first failure will not be possible.
3. The extensive damage by fire of the components within the engine compartment indicates a long term exposure to fire. This long term exposure to fire contradicts the carrier time frame of 911 notification and arrival.



View of right side of engine with air cleaner removed.



View of fire damage to top of engine



LLV#: 0215911
Location: Parsons, Tennessee
DOL: 7/16/2015

Trident Contract Number: 1605-082
Engine: 1990 2.5 Liter

DISCUSSION

With the examination of the wire harness revealing no evidence of failure, Trident determined the first failure to involve associated components within the dash at the area of the steering column. With the complete destruction of the dash area and associated components Trident was unable to determine the first failure in this area.

CONCLUSION

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV, No. 0215911, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was in the dash area above the steering column.
2. The exact point of origin could not be determined due to the extent of fire damage in the area of the vehicle's dash.
3. Trident concluded that the new wiring harness had not been involved in the ignition of this fire
4. Trident has classified this fire as undetermined in nature.



Close up view of dash area at steering column.



Alternate view of dash area.



LLV#: 4315980
Location: Richmond, Virginia
DOL: 7/11/2015

Trident Contract Number: 1605-083
Engine: 1994 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the passenger compartment which extended to the engine compartment causing extensive damage. The main engine wiring harness was partially consumed by direct fire attack. The ignition interrupter located on the lower half of the steering column was consumed by fire.

A possible hypothesis for the cause of the fire may be the result of an electrical failure. This is based upon the ignition interrupter along with missing wire from the main engine wiring harness, along with the witness smelling an odor of electrical wires burning while driving the LLV.

An electrical short within these areas could not be ruled out as a possible ignition scenario.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV, No. 4315980, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the passenger compartment.
2. The point of origin could not be determined due to the lack of information and extensive fire damage.
3. A possible hypothesis for the cause of the fire was noted in the above discussion section.
4. Because there is more than one possible hypothesis, the cause of the fire must be listed as undetermined.



View of the area of origin.



LLV#: 8215497
Location: Staten Island, New York
DOL:7/19/2015

Trident Contract Number: 1605-084
Engine: 1988 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended from the exhaust manifold and into the engine and passenger compartments. Witness accounts reported hearing loud knocking noise from the engine which got worse until the engine made a loud bang. After a short period smoke and fire was observed from the hood of the LLV. The engine failed due to a lack of oil and threw a rod through the block. This caused the leftover oil to leak onto the heated exhaust manifold causing a hot surface ignition and creating the fire.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV, No. 8215497, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the exhaust manifold.
3. The engine failed causing a hole in the block which allowed oil to leak onto the hot exhaust manifold.
4. The oil leaking onto the heated exhaust manifold caused a hot surface ignition and ignition of available combustibles.
5. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of the point of origin.



LLV#: 2208564
Location: Ft. Lauderdale, Florida
DOL: 7/27/2015

Trident Contract Number: 1605-085
Engine: 1992 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended from the carburetor/throttle body and into the engine compartment. The carburetor had fuel moving through the system when the "back fire" occurred, igniting the unburned fuel, causing a flame. The fire damaged nearby combustibles and wiring.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation, and analysis of the fire loss involving LLV, No. 2208564, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the carburetor/throttle body.
3. The failure of the engine to run properly caused a back fire, which produced a flame that ignited nearby fuel. The flame extended out of the air cleaner to ignite nearby combustibles through the gap in the air cleaner cover.
4. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of the point of origin.



LLV#: 3316398
Location: Weatherford, Texas
DOL: 8/1/2015

Trident Contract Number: 1605-086
Engine: 1993 2.2 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended from the fuel rail/manifold and throughout the engine compartment. The disconnected fuel line at the fuel rail leaked fuel over the heated manifold. The fire damaged nearby combustibles and wiring.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV, No. 3316398, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the fuel line connection.
3. The fuel line connection which came disconnected from the fuel rail system caused gas to leak on to the heated manifold. The fuel was ignited which produced a flame that ignited nearby combustibles. The flame extended from this area to ignite nearby combustibles.
4. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of the fuel line connection.



LLV#: 9211688
Location: Santa Barbara, California
DOL: 8/5/2015

Trident Contract Number: 1605-087
Engine: 1989 2.5 Liter

DISCUSSION

Trident's examination of the fire event occurring in LLV, No. 9211688 has concluded that two events came together to cause this fire. The first being an oil leak probably due to an overfill situation. The second being the ECM ground strap being secured behind the emergency brake cable causing the ground strap to fail. This failure would also explain the carrier reporting the vehicle starting but stalling out when placed in gear.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis LLV, No. 9211688, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. Trident has determined that the ignition source for this fire to have been the failure of the ECM ground strap due to it being secured behind the emergency brake cable.
2. This failure of the ground strap caused the failure of the ECM as well.
3. The failure of this ground strap would have caused electrical heating and arcing to occur that ignited the available oil being sprayed on it.



View of ground strap mounted behind emergency brake.



LLV#: 2211593
Location: Minnetonka, Minnesota
DOL: 8/8/2015

Trident Contract Number: 1605-088
Engine: 1992 2.5 Liter

DISCUSSION

All fire damage and patterns examined indicate the fire to have originated at the mounting clamp for the positive and negative battery cables, located on the engine block. The damage to the wiring at this point indicates the most probable cause to be the metal clamp wearing away the insulation on the battery cable. The wearing away of the insulation would have exposed the uninsulated wire to contact the metal clamp and create a short circuit. This short circuit would have caused the vehicle to stall due to interrupted electrical power.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV, No. 2211593, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. Trident has concluded that the area of origin for this fire to be the right side of the engine.
2. Trident has also concluded that the point of origin was at the mounting clamp that secured the positive and negative battery cables to the engine block.
3. The cause of this fire is determined to be electrical in nature with the battery clamp wearing away the insulation on the battery cable, causing a short circuit.



View of battery clamp.



LLV#: 9212048
Location: Edinburg, Texas
DOL: 8/14/2015

Trident Contract Number: 1605-089
Engine: 1989 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended from the starter upward to the engine compartment. The starter failed by staying on and overheating, causing the oily residue to ignite. The starter gear engages the flywheel inside of the bellhousing. There was oily residue found inside of the bellhousing along with soot damage.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV, No. 9212048, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the starter.
3. The failure of the starter to disengage the flywheel caused it to run until it overheated, which ignited the oily residue. The flame extended out of the bell housing and ignited nearby wiring and combustibles.
4. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of the point of origin.



Close-up view of the point of origin.



LLV#: 4310007
Location: Salem, Wisconsin
DOL: 8/14/2015

Trident Contract Number: 1605-090
Engine: 1995 2.2 Liter

DISCUSSION

After a complete investigation of this fire, Trident has determined that the origin of the fire was at the positive terminal on the starter solenoid. The cause of this fire is determined to be the disconnected block heater having been left or dropped onto this connection and wearing away the rubber boot covering the terminal until the metal block heater base contacted the terminal creating an electrical event.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV 4310007, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The origin of this fire is determined to be on the top of the starter solenoid.
2. The cause of this fire is determined to be the old style block heater being removed and dropped or left on top of the starter solenoid.
3. This action caused the metal block heater to wear away the rubber boot cover the positive terminal on the solenoid.



View of ground strap wire tied to oil fill tube showing evidence of electrical arcing.



View of view of starter and solenoid after removal showing block heater fused to it.



LLV#: 9201525
Location: Fresno, California
DOL: 8/17/2015

Trident Contract Number: 1605-091
Engine: 1989 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended from the carburetor and into the engine compartment. The carburetor had fuel moving through the system when the "back fire" occurred, igniting the unburned fuel, causing a quick flame. The fire damaged nearby combustibles and wiring.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV, No. 9201525, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the carburetor/throttle body.
3. The failure of the engine to run properly caused a backfire, which produced a flame that ignited nearby fuel. The flame extended out of the air cleaner to ignite nearby combustibles.
4. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of the point of origin.



LLV#: 4314186
Location: Granbury, Texas
DOL: 8/18/2015

Trident Contract Number: 1605-092
Engine: 1994 2.2 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended from the positive battery cable and into the engine compartment. The positive battery cable became in contact with the metal bracket creating an arc. The transmission was leaking spraying fluid around in the compartment and to the rear causing it to ignite. The fire consumed the available nearby combustibles and wiring insulation.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV, No. 4314186, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the positive battery cable on the front left side of the engine compartment.
3. The positive battery cable contacted the metal bracket causing an arc which ignited nearby fuels (transmission fluid).
4. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of the point of origin.



LLV#: 4317105
Location: Portland, Oregon
DOL: 8/29/2015

Trident Contract Number: 1605-093
Engine: 1994 2.2 Liter

DISCUSSION

The examination of the fire damaged parts revealed a fire occurred in the passenger compartment. The fire appeared to have extended from the headlight switch to the instrument cluster. The fire may have damaged a nearby combustibles and wiring. A possible hypothesis for the cause of the fire may be the result of an electrical failure of the headlight switch. This is based upon the fire damaged parts that were examined from the LLV.

An electrical short within this area could not be ruled out as a possible ignition scenario.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV#4317105, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the passenger compartment.
2. The point of origin could not be determined due to the lack of information and the fact the LLV was repaired and returned to the branch.
3. A possible hypothesis for the cause of the fire was noted in the above discussion section.
4. Because there could be more than one possible hypothesis, the cause of the fire must be listed as undetermined.



View of headlight switch damage.



LLV#: 1268636
Location: Stuart, Florida
DOL: 9/1/2015

Trident Contract Number: 1605-094
Engine: 1991 2.5 Liter

DISCUSSION

Trident recommends that the practice of moving fuses to a new location on the fuse block be stopped. These failures involve another unfound problem that causes the original location of the hazard fuse to fail. The replacement of the fuse block and wire harness may solve the problem. An analysis of the amperage load of the new style strobe lights should occur to determine if one 15 amp fuse is sufficient as well as the required wire size that is feeding these lights is sufficient to prevent reoccurring overheating.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV, No. 1268636, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire is the fuse block, located under the dash on the right side of the operator.
2. The point of origin for this fire is the electrical feed connection to the hazard fuse on the rear of the fuse block.
3. The moving of the hazard fuse above and to the left of the original location occurred when the original location overheated and failed.
4. The cause of this fire is undetermined due to the original failure and subsequent second failure of the fuse connection being undetermined.



View of location of fuse at time of fire (left arrow) and original location (right arrow).



LLV#: 4314484
Location: Yuma, Arizona
DOL: 9/3/2015

Trident Contract Number: 1605-095
Engine: 1994 2.2 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended from the right side of the engine upward to the engine compartment.

The main engine wiring harness was partially consumed by direct fire attack. A possible hypothesis for the cause of the fire may be the result of the hole in the timing chain cover on the right front of the engine this would allow engine oil to be sprayed on hot surfaces of the engine. It would also support witness statement of an odor of burning oil. There was oily residue found throughout the engine compartment. A hot surface ignition from leaking engine oil could not be ruled out as a possible ignition scenario.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV#4314484, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin could not be determined due to the lack of information and extensive fire damage.
3. A possible hypothesis for the cause of the fire was noted in the above discussion section.
4. Because there is more than one possible hypothesis, the cause of the fire must be listed as undetermined.



View of the timing chain cover.



LLV#: 4306653
Location: Basking Ridge, New Jersey
DOL: 9/9/2015

Trident Contract Number: 1605-096
Engine: 1994 2.2 Liter

DISCUSSION

Examination of this fire loss has determined the fire originated in the area of the bulkhead within the engine compartment. This determination is based upon the observations of [REDACTED] and the noted fire patterns on the vehicle. It should also be noted that with the extensive fire damage to this vehicle [REDACTED]'s time frame of slightly more than five minutes is not enough burn time for the damage noted.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV 4306653, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the right side of the bulkhead within the engine compartment.
2. With the extensive fire damage to this vehicle, a point of origin or first material ignited could not be determined.



View of engine.



LLV#: 9218446
Location: Fremont, California
DOL: 9/10/2015

Trident Contract Number: 1605-097
Engine: 1989 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended from the carburetor and into the engine compartment. The carburetor had fuel moving through the system when the "back fire" occurred igniting the unburned fuel causing a flame. The fire damaged nearby combustibles and wiring.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV#9218446, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin was determined to be the carburetor.
3. The failure of the engine to run properly caused a back fire, which produced a flame that ignited nearby fuel. The flame extended out of the air cleaner to ignite nearby combustibles.
4. After a complete investigation of this fire loss, Trident has determined this fire to be a mechanical failure.



View of Point of Origin.



LLV#: 0207615
Location: Yuma, Arizona
DOL: 9/17/2015

Trident Contract Number: 1605-098
Engine: 1990 2.5 Liter

DISCUSSION

The examination of the fire damage revealed a fire occurred in the engine compartment. The fire extended from the right side of the engine upward to the engine compartment.

The main engine wiring harness was partially consumed by direct fire attack. A possible hypothesis for the cause of the fire may be the result of a battery failure. It would also support witness statement of trying to restart the vehicle several times with negative results then seeing smoke.

An electrical ignition from a battery failure could not be ruled out as a possible ignition scenario.

Another hypothesis theory for the cause of the fire could be the starter which has fire damage. This part is located on the lower right side of the engine and has failed on past occasions.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of the fire loss involving LLV#4314484, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the engine compartment.
2. The point of origin could not be determined due to the lack of information and extensive fire damage.
3. A possible hypothesis for the cause of the fire was noted in the above discussion section.
4. Because there is more than one possible hypothesis, the cause of the fire must be listed as undetermined.



View of the battery.



View of the remaining wire for fuse block.



LLV#: 8202726
Location: Louisa, Virginia
DOL: 9/15/2015

Trident Contract Number: 1605-099
Engine: 1988 2.5 Liter

DISCUSSION

A complete investigation of this fire determined the fire to have originated at the power feed connection for the flasher switch. This failure is the result of a poor connection. This poor connection would have caused the improper operation of the switch. This failure reiterates the need for all electrical connections to be examined and replaced as needed during the maintenance program.

CONCLUSIONS

Based upon a review of information gained from others and from its own observation, investigation and analysis of LLV # 8202726, Trident Engineering Associates, Inc. concludes to a reasonable degree of scientific certainty that:

1. The area of origin for this fire was determined to be the right side of the dash within the operators' compartment.
2. The point of origin for this fire was determined to be a failure of the wire connection at the flasher switch.
3. The failure of this connection reinforces the need for examination of all electrical connections.



View of flasher switch connections showing evidence of electrical arcing.



DISCUSSION AND STATISTICAL DATA

LLV FIRES BY MODEL YEAR

Trident's examination of the fire losses involving LLVs have produced statistics that reveal problematic areas. First of which is the numbers of LLV fires by year of manufacture (see Figure 1). 1992 and 1994 vehicles had the greatest numbers of fires. These numbers should be compared to the number of LLVs remaining in the fleet for those years. It is unknown by Trident the total number of 1992 and 1994 vehicles that the post office has in their fleet. Comparison of these numbers may indicate a problem with model years 1992 and 1994 vehicles. For a complete ratio analysis, the number of LLVs needs to be determined for all other years in the entire fleet.

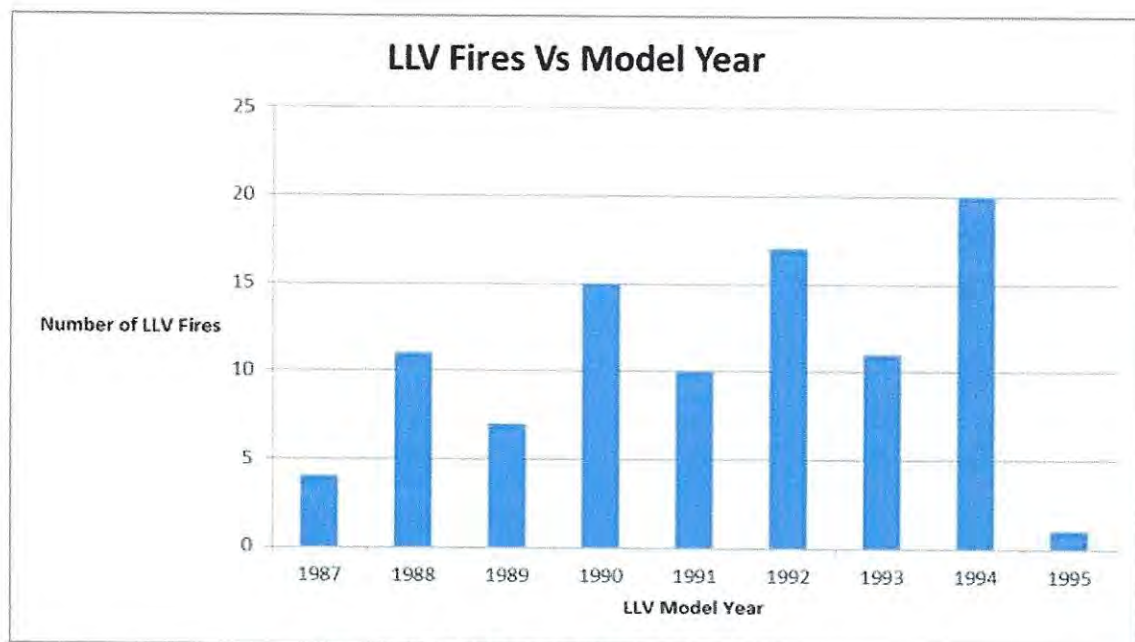


Figure 1. LLV fires by manufacture year



LLV FIRES BY MONTH

These numbers show that the greater number of fires occurred during the months of January, February, March and August of the year. Over the course of the contract, an average of 6 LLV fires occurred each month. The losses during the months of January, February March and August is evidence of the added stress placed on the vehicles electrical system due to extreme heat and cold. This added load can be attributed to the worn and broken down wiring resulting in electrical failures.

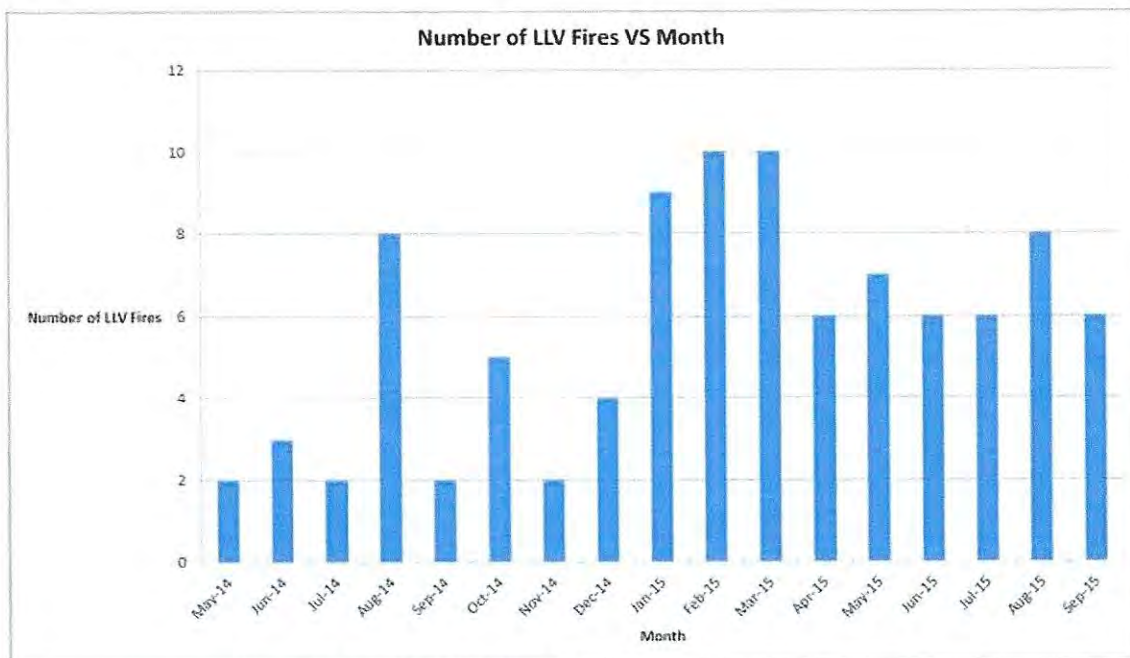


Figure 2. Number of LLV fires by month



LLV FIRES BY STATE

These numbers show the most fires occurring in Texas and California. This may be the fact that these states have the most numbers of vehicles in the fleet due to size of the territory. However the next most visited are Wisconsin, Ohio and New York. These statistics should be looked at in the fact that 33 states and Puerto Rico were visited for fires. There may be a possibility that the states not having fires are operating in a different fashion as far as maintenance is concerned.

As stated with the year of manufacture above, the number of LLVs in each state is unknown to Trident. For a complete ratio analysis, the number of LLVs needs to be determined for each state in the entire fleet.

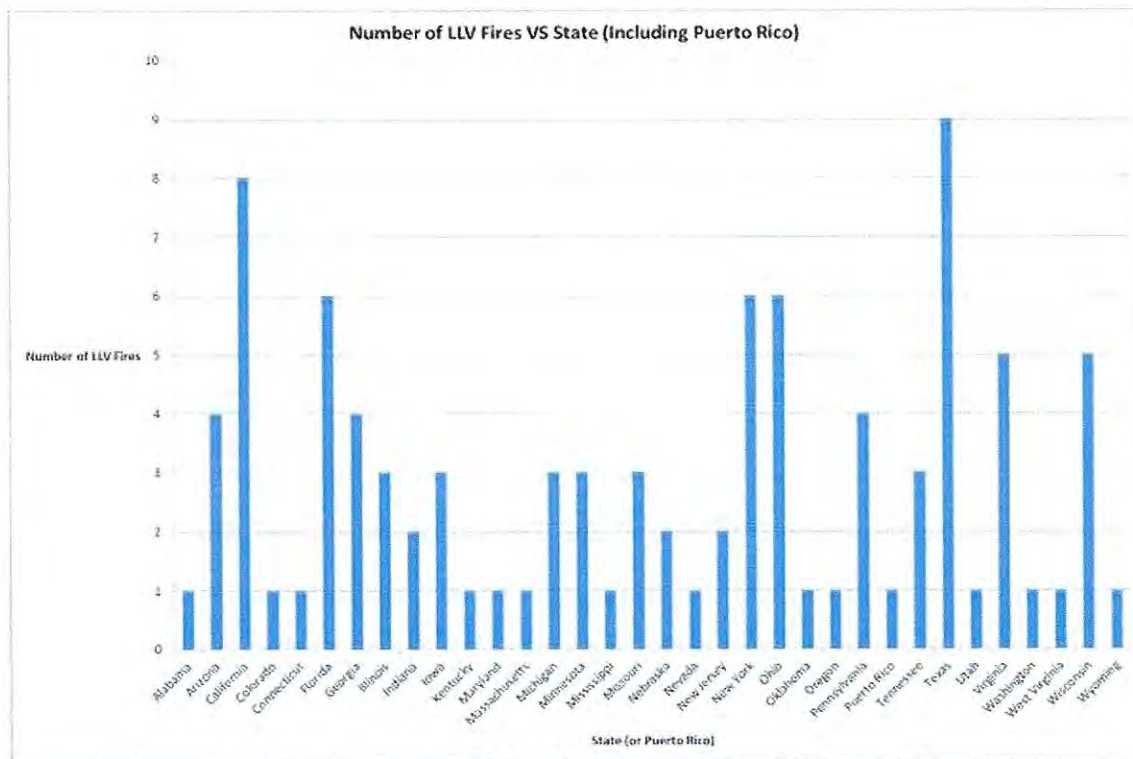


Figure 3. Number of LLV fires by State loss occurred.



LLV FIRES BY ENGINE SIZE

The 2.2 Liter LLVs had far fewer fires than the 2.5 Liter LLVs. The 2.5 Liter LLVs were introduced in 1987, and the 2.2 Liter LLVs were introduced in 1994. The majority of the 2.5 Liter LLV fires were electrical in nature again leading to the problem of worn out electrical systems.

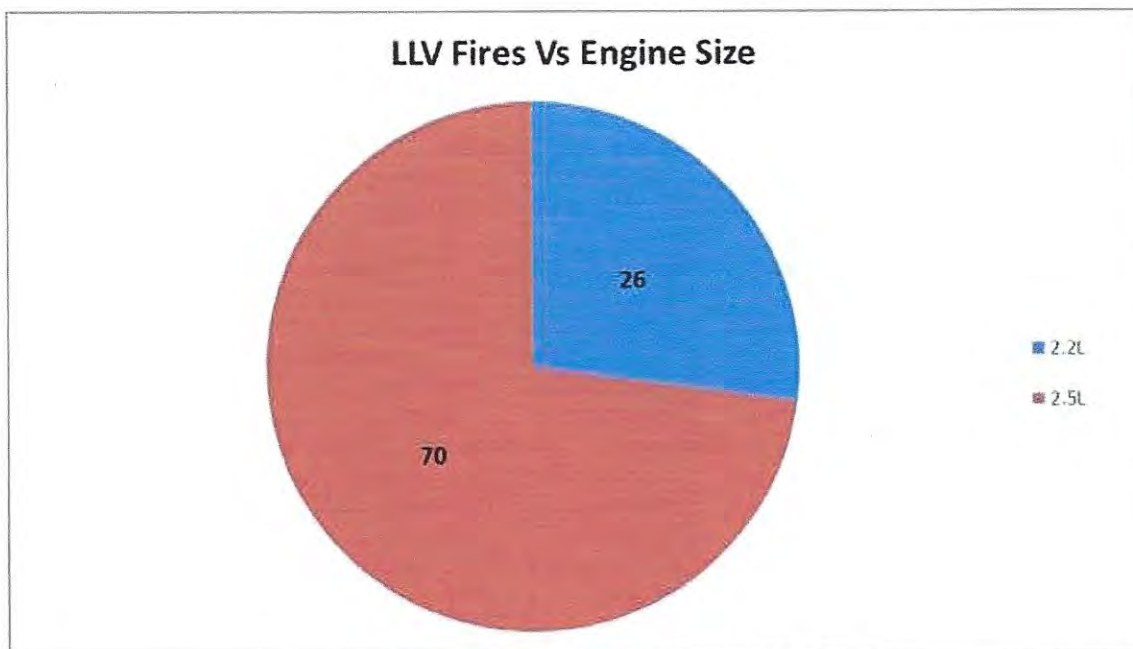


Figure 4 Number of LLV fires by engine size



CAUSES OF LLV FIRES

In Figure 5, the first column listed is electrical failures. These are noted failures of the unprotected wire leading from the alternator to the battery; failures of the main battery cable leading to the starter, as well as failures within the interior and engine compartment wire harnesses.

The second column represents the failure of worn parts. These failures are attributed to failed switches on the dash as well as failed components on the engine (e.g. failed distributorless ignitions, failed alternators, etc.).

The third column represents failed fuel system components. These failures can be contributed to failed fuel filters and the failure of fuel lines due to their close proximity to the exhaust manifold. It should be noted that the fires involving the fuel lines being too close to the exhaust manifold decreased after this cause was determined by Trident and reported to the Postal Service for correction.

The fourth column involves human error. This category involves either carrier abuse of the vehicle or inadvertent acts causing the fire.

The fifth column involves maintenance issues such as, improper installation of parts, quick fixes without determination of the root cause, and failures to take the time to properly maintain the vehicle.

The sixth column involves mechanical failures within the engine compartment (e.g. blown motors and transmission failures).

The seventh column involves possible electrical failures. This column represents fires that most probably involved the electrical system however due to the extent of the fire damage to the vehicle an exact first failure could not be determined.

The eighth column involves undetermined fires. This column represents the fires in which the extent of damage was so great that any determination would be impossible.

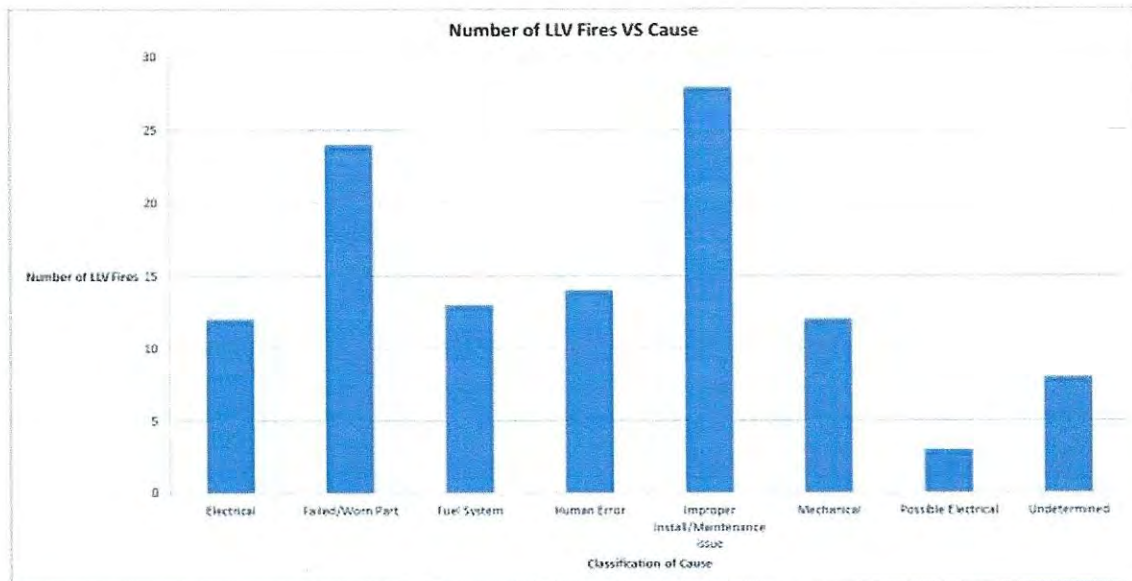


Figure 5 Number of LLV fires by cause



RECOMMENDATIONS AND CONCLUSIONS

Trident has investigated sufficient numbers of incidents to recognize some common threads and urgent concerns. Areas of note include issues of maintenance, materials, design, communication, policy and organizational culture. Trident reserves the right to alter its findings and recommendations if additional information is provided. Assigning levels of urgency with regard to the various recommendations included in this report is difficult. Each item below is important in reducing the number of fires and, therefore, the potential for loss of property and personal injury.

MAINTENANCE ISSUES

Below are priorities which need to be addressed concerning maintenance issues.

Trident recommends the replacement of both engine wiring harnesses within these vehicles. This systematic and fleet-wide replacement of the interior and engine compartment wire harnesses (to include the fuse block). This work will alleviate various major and minor problems resulting from the thermal and age-related breakdown of these wires. Trident recommends that at minimum the wire harnesses in these vehicles be replaced when engine replacement occurs.

Trident recommends the examination and if necessary replacement of the main battery cable including the installation of a fusible link in the wire leading from the battery to the alternator. Installation of a fusible link would significantly reduce the likelihood of fire due to a failure within the rectifier bank of the alternator. The rectifier bank is typically six (6) high current rectifiers which convert the output of the 3-phase windings (3 phase AC) to DC to charge the battery. If one or more of these rectifiers shorts out (shorting out is by far the most common method of failure for a rectifier) it allows very high current (possibly hundreds of amps) to flow from the battery to ground, very easily causing that wire to self-destruct and start a fire.

Trident also found, the use of quick fixes should not continue (e.g. just replacing a fuse and/or utilizing electrical jumper wires without trouble shooting the problem or determining the root cause of failure).

Trident recommends the development of a new bolt-in replacement dash. This new dash should include heavy duty switches, replacement wire harness, and the movement of the fuse block away from the bulkhead to prevent water contact from leaking windshields. This replacement dash would allow for much less down time and correct many problems observed during Trident's inspections of the LLV fires.

CHANGE IN CARRIER/POST MASTER RESPONSIBILITY

Trident recommends that the daily pre-use safety check of the LLVs include the checking of fluids and a visual check and immediate reporting of fluid leaks. As stat-



ed this does not require mechanical knowledge. This simple act will extend the life of the engine and reduce prolonged down time of the LLVs.

Trident recommends that the Carriers and Post Masters be educated to not operate vehicles that are in poor running condition. Carriers operating vehicles with gasoline leaks and loud engine noises is an operation problem that can be addressed allowing for repairs to be completed as opposed to the potential loss of the LLV if they are continued in service.

Carriers and Post Masters must pay attention to warning signs:

1. Provide basic carrier education on potential mechanical problems for which to be on the lookout (e.g., leaking fluids, periodic loss of power/stalling, unusual noises, etc.).
2. If you see or smell smoke, stop driving, turn off the ignition, and immediately call for assistance.
3. If you see smoke or fire, call 911 immediately, then call the supervisor.

Trident recommends the carriers and Post Masters be reeducated regarding when not to attempt to make deliveries due to inclement weather and/or road conditions. Vehicles were lost through carrier attempts to make deliveries in extremely poor road conditions. The vehicles became stuck and the carrier attempts to get them out resulted in catastrophic failure.

Trident observed several vehicles that were totally lost due to delays in calling 911. Vehicles that encountered small fires resulted in total vehicle losses due to the time delay.

Trident recommends that the carriers should not attempt to restart a stalled LLV more than twice (no more than 3 seconds each attempt). If the LLV does not start, remove the keys and call the supervisor. Repeated and aggressive attempts to restart the LLV can turn an easily replaced shorted electrical circuit into a fire; risking the complete loss of the LLV and the potential loss of life.

Trident recommends changing the Vehicle Damage reporting system by creating a new "Vehicle Damage Report" for any damages unrelated to driver error and not covered under the current Vehicle Accident Report. The new Vehicle Damage Report should be used to protect life and property, and not as a tool for negative employee and Post Office Branch evaluations. Promote a cultural change within the Postal Service which encourages employees (carriers and supervisors) to report minor mechanical issues. At the same time, make employees responsible for notifying appropriate channels while problems are small. Under-reporting and non-reporting of small problems has led to the big problem of LLV fires. The vehicle operator is the first line of defense against total vehicle loss.

USE OF OUTSIDE CONTRACTORS

A large number of outside contractors work on the LLVs due to the extended distances from the LLV assigned Vehicle Maintenance Facility and/or a lack of mechanics at the Vehicle Maintenance Facilities.

Trident recommends that the use of outside contractors must be more rigorously monitored. There have been serious problems with the quick fix "get it back on the



road” mentality. Postmasters see these outside contractors as a faster way to receive needed repairs. This may be true, however the proper repair is often not the fastest.

Due to the extended distances of some post offices to their assigned Vehicle Maintenance Facility a large number of these vehicles are rarely, if ever, looked at by VMF personnel. There are several possible solutions to this, including:

- The development of fleet maintenance trucks to travel to assigned post offices and effect onsite repairs to the LLVs.
- Contracting a national fleet maintenance contractor that would regularly travel to the post office, effect repairs and maintenance, and determine if/when vehicles need to be transported to the VMF for necessary repairs.

The use of either of these options would give the Postal Service more control of who is working on these vehicles and how the vehicles are repaired. Either of these options would help extend the service life of the existing LLVs and the eventual fleet replacement vehicles.

Trident understands that there are very few spare vehicles, however with the age and use of the current LLVs, proper maintenance is a must. The Postal Service cannot continue to loose vehicles to fire at the current rate.

MAINTENANCE SCHEDULES

Trident’s collection of maintenance records has shown that the Preventive Maintenance Inspection (PMI) sheets are not always complete. Very often the back page of the PMI is overlooked and/or not completed. The back page contains many areas involving the ongoing problems that result in fires in the LLVs.

Maintenance on the vehicles are currently being conducted semiannually. This means that these aging heavily used vehicles go six months before having preventive maintenance. A possible solution for this would be to break down the preventive maintenance program into four parts with only a one page exam of the vehicle each time. This decreases the time between inspections allowing discovery of problems before they become a major issue. Inherent problems such as fuel lines and the electrical system could be addressed in a timely manner. This may shorten the immediate down time of the vehicle and allow a more focused maintenance to be performed.

Trident recommends regular maintenance be performed on both an hours and mileage schedule. This can be accomplished by the installation of an hours meter to monitor engine run time. The odometer can be used to track the mileage.



Rimkus Consulting Group, Inc.
1661 International Drive
Suite 400
Memphis, TN 38120
(855) 782-4228 Telephone
(615) 883-4118 Facsimile

July 6, 2016

Re: RCG File No: 53700736
LLV Number: 2216281
VMF Location: 685 S. 3rd Street in Memphis, Tennessee
Subject: Final Report

Rimkus Consulting Group, Inc. was retained to examine LLV 2216281, VIN 1GBBCS10A9P2904244 that was involved in a fire event. The vehicle was examined at the USPS Memphis Vehicle Maintenance Facility located at 685 S. 3rd Street in Memphis, Tennessee. The fire incident reportedly occurred at 109 S Highland Avenue in Jackson, Tennessee on April 13, 2016.

In the course of our work, we examined and documented the fire damaged vehicle on April 29, 2016, and interviewed carrier/driver, via telephone on May 4, 2016. Our work to complete this assignment was performed by Fire Consultant John R. Farill, IAAI-CFI. This report and case was reviewed by Jack R. Kennedy, III, IAAI-CFI, Technical Fire Manager.

While performing our investigation, we employed the methodology of fire investigation using a systematic approach as recommended in the current edition of the National Fire Protection Association's NFPA-921 "Guide for Fire and Explosion Investigations.

Conclusions

1. An examination of the involved LLV indicated that the fire caused moderate fire damage within the operator compartment.
2. The specific area of fire origin was determined to be in and around the headlamp switch mounted in the dashboard of the operator compartment.

3. The specific ignition sequence and cause of the fire was determined to be the direct result of an adverse electrical event involving the headlamp switch.

Observations

Exterior Inspection:

Examination of the vehicle began at the front exterior and continued in a clockwise direction. For the purpose of this report, the right side of the vehicle refers to the driver's side and the left side refers to the passenger side.

Fire patterns were observed on the roof line just above the driver's side windshield and driver side door, moderate fire/thermal damage was observed in these areas. The driver side windshield was consumed by the fire. The driver side door sustained soot damage to the upper portion of the door frame. There was no fire, thermal, or smoke damage observed on the front end, passenger side, or rear of the vehicle.

Interior Inspection:

Examination of the interior of the vehicle revealed severe fire damage to the dashboard area with the most concentration on the driver's side. Driver's seat and interior roof area received moderate fire/thermal damage, with varying degrees of soot damage noted throughout. The majority of the combustible materials in the dashboard area had been consumed during the fire. Electrical conductors in the passenger compartment were examined and there were no indications of adverse electrical activity.

Burned remains of the headlamp switch assembly were found in the floor board debris. Any remnants of the fan motor switches could not be located.

Engine Compartment Inspection:

The engine compartment was examined. The vehicle was equipped with a GM 2.5L gasoline engine. Minor thermal damage was observed in the rear area of the engine compartment along the bulk head, heat from the resulting fire had progressed from the passenger compartment into the engine compartment through the manufactured bulkhead openings and through the bulkhead. The fuel system was examined and found to be intact with no damage noted. The battery for the vehicle was located at the front right side of the engine compartment and had no fire damage. The engine oil, transmission fluid, power steering fluid, and brake fluid were examined and observed to be within their normal operating range. Based on the fire patterns, the engine compartment was determined not to have been the area of origin.

Undercarriage Inspection:

Examination of the undercarriage revealed no fire or mechanical damage. The LLV was mounted on a GM frame and was undamaged. The fuel tank and fuel lines did not show any signs of failure. The aftermarket fuel filter assembly located on the left side frame rail was equipped with a WIX model fuel filter. The LLV was equipped with a GM fuel filter system. The exhaust system was intact and the engine / transmission did not reveal any leaks.

Fuse Panel Inspection:

Examination of the fuse panel revealed that it had sustained thermal damage consistent with exterior fire impingement. All fuses were still intact and identifiable. There were no indications of an internal failure.

Area of Fire Origin:

It is our opinion, based on the observed pattern of fire damage and a systematic evaluation of the remaining physical evidence, that the fire originated within the left side of the dashboard area of the vehicle in the area of the headlight switch and heater/AC switches.

Contributing Factors:

Issues with the headlamp switch/fan motor switch in the area of origin could not be eliminated. The involved components were collected and sent to Jack Kennedy in the Charlotte, North Carolina office for analysis.

Evidence Collected:

Exhibit 1: Dashboard wiring harness, headlight switch

Collected evidence was examined in the lab and confirmed that the fire originated in and around the headlamp switch.

Interview:

On May 4, 2016, an interview was conducted with the carrier/driver of the vehicle at the time of the fire. He reported the following information:

- He had been assigned to this LLV for the past 10 months.
- Over the past 10 months he had two issues with this LLV. The first issue was with the hazards lights. He stated the fuse had blown approximately 4 times. The

second issue was the windshield leaking in the area of the driver's side. He stated the issues were fixed by the service technician out of the Jackson, Tennessee USPS office.

- He stated on the day of the fire he had no electrical or mechanical issues with this LLV.
- He stated on this day he had the headlight switch and "AC" switch in the on position.
- He stated the events leading up to the fire were as follows: He finished his assigned route and was driving back to the USPS site in the left lane of traffic. A passerby started waving at him, he then slowed down and proceeded to the right lane of traffic when he noticed smoke coming from the dashboard in the area of the headlight switch. He stated the headlight switch was in the on position at this time. After noticing the smoke, he immediately stopped the vehicle, put it in park, shut off the ignition switch, and grabbed all the mail from the LLV. He then called the Jackson, Tennessee USPS office and explained the situation to a supervisor. He stated about a minute after speaking with the supervisor, he observed flames coming from the dashboard in the area of the headlight switch. He immediately called his supervisor again and advised them of the fire, he stated the office called 911. He stated "the fire was going good upon arrival of the fire department".
- He stated he was not injured as a result of the fire.

Service Records:

A review of the service records for the involved LLV did not indicate any repairs or service that would have caused or contributed to the cause of the fire.

Photographs taken during our work were retained in our files and are available to you upon request.

This report was prepared for the exclusive use of USPS Engineering and was not intended for any other purpose. Our report was based on the information available to us at this time. Should additional information become available, we reserve the right to determine the impact, if any, the new information may have on our opinions and conclusions and to revise our opinions and conclusions if necessary and warranted.

Thank you for allowing us to provide this service. If you have any questions or need additional assistance, please call.

Sincerely,
RIMKUS CONSULTING GROUP, INC.

John R. Farill

John R. Farill, IAAI-CFI
Fire Consultant

Jack R. Kennedy, III

Jack R. Kennedy, III, IAAI-CFI
Technical Fire Manager

Attachments: Photographs, CVs

July 6, 2016
RCG File No. 53700736

Photograph 1
Front of LLV.



Photograph 2
Drivers side of LLV.



July 6, 2016
RCG File No. 53700736

Photograph 3
Rear of LLV.



Photograph 4
Passenger side of LLV.



July 6, 2016
RCG File No. 53700736

Photograph 5
Engine compartment.



Photograph 6
Rear interior view.



July 6, 2016
RCG File No. 53700736

Photograph 7

Area of origin, looking from passenger to driver side.



Photograph 8

Driver side view.



July 6, 2016
RCG File No. 53700736

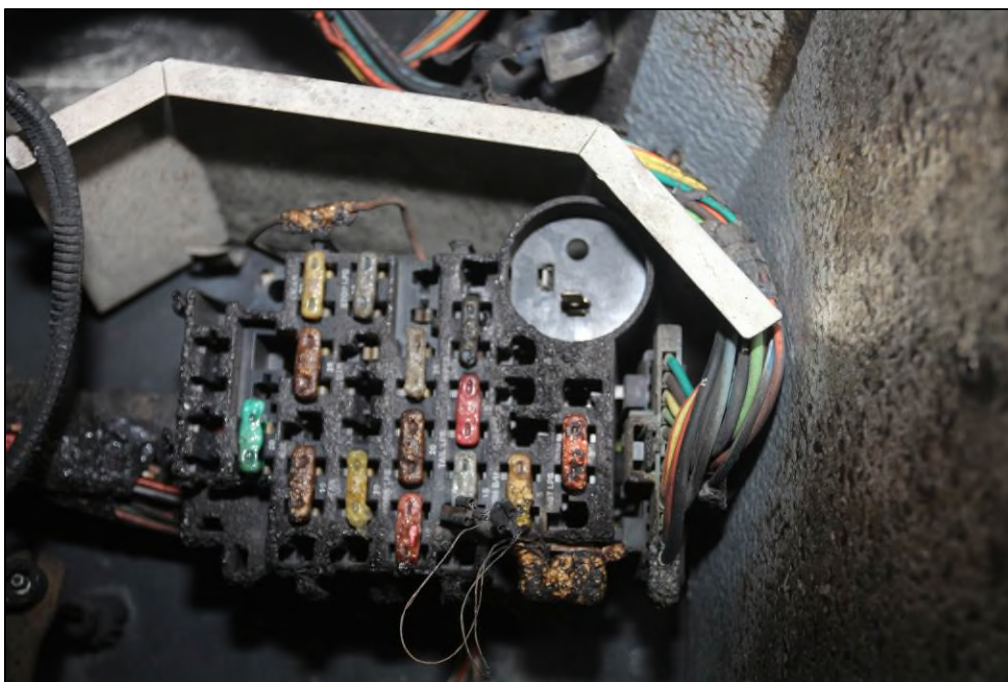
Photograph 9
Driver side view.



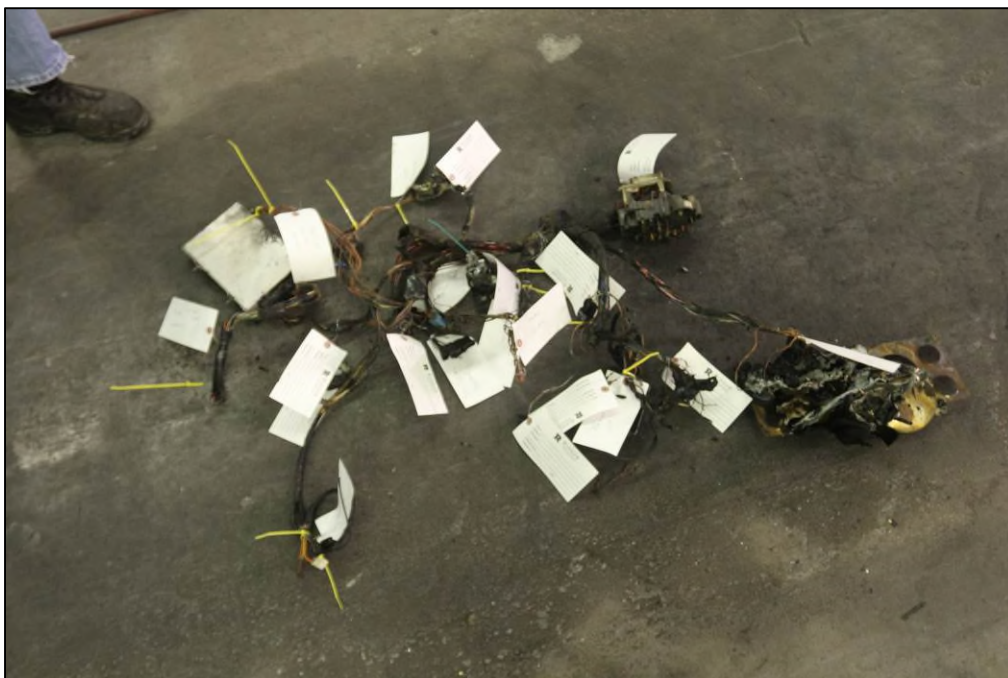
Photograph 10
Area of origin.



Photograph 11
Fuse panel.



Photograph 12
Dashboard wiring harness with labeling, (Exhibit 1).



July 6, 2016
RCG File No. 53700736

Photograph 13
Headlight switch.



July 6, 2016
RCG File No. 53700736

CVs



**JOHN R. FARILL, IAAI-CFI
FIRE DIVISION MANAGER, EASTERN REGION**

Mr. Farill started his public safety career as a police officer in 1984 before transferring to the Palm Beach County Fire Rescue as a Fire Investigator in 2002. As a Palm Beach County fire investigator, he performed fire origin and cause investigations, interview and interrogation of witnesses and suspects, processing of evidence and criminal investigations.

As the lead investigator, Mr. Farill's forensic experience encompasses investigation of more than 850 fires involving fire and explosion causation in industrial settings, residential and commercial structures, vehicles, marine vessels, aircraft and wildland fires. Areas of expertise include management of fire scene analysis, evidence and data collection, monitoring of destructive and non-destructive testing, investigative interviews, scene photography, accelerant testing, and ICC and NFPA fire code compliance. He has provided legal depositions and court testimony in support of legal and technical findings as an expert witness.

Mr. Farill is an IAAI-Certified Fire Investigator, an NFPA Certified Fire Inspector, Florida State Division of State Fire Marshal Fire Investigator II, Municipal Fire Safety Inspector and a Fire Instructor 1. He has received his Pro Board certification through the National Board on Fire Service Professional Qualifications as a Fire Investigator, NFPA 1033. He instructs Fire Origin and Cause classes for college.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Commission on Criminal Justice Standards and Training – Law Enforcement Recruit Training 11/87

Florida Division of State Fire Marshal – Florida State Firefighter II 1/2002

Florida Division of State Fire Marshal – Municipal Fire Safety Inspector 10/2002

Florida Division of State Fire Marshal – Fire Service Instructor 9/2007

Florida Division of State Fire Marshal – Fire Service Investigator II 9/2007

International Association of Arson Investigators – Certified Fire Investigator 11/2006

Florida Department of Agriculture & Consumer Services – Private Investigator 9/2007

Gold Coast Forensic Association

International Association of Arson Investigators

Florida Fire Marshal's and Inspectors Association

EMPLOYMENT HISTORY

2011 – Present

Rimkus Consulting Group, Inc.

2002 - 2011

Palm Beach County Fire Rescue

2001 - 2002

City of Greenacres Public Safety

1987 – 2001

Florida Fish and Wildlife Conservation Commission

1986 - 1987

City of Gulf Breeze Police Department

1984 – 1986

Escambia County, Florida, Sheriff's Department



**JACK R. KENNEDY, III, IAAI-CFI, CFEI, CVFI
EASTERN REGION FIRE DIVISION MANAGER**

Mr. Kennedy is a Certified Fire Investigator (IAAI-CFI) with the International Association of Arson Investigators, a Certified Fire and Explosion Investigator (CFEI) and Certified Vehicle Fire Investigator (CVFI) with the National Association of Fire Investigators, and a Certified Fire Investigator (NCCFI) with the North Carolina Fire and Rescue Commission. Mr. Kennedy is a Licensed Private Investigator with the North Carolina Board of Private Protective Services and the South Carolina Law Enforcement Division. He served as a Fire Investigator with the Charlotte Fire Investigation Task Force where he investigated and determined the origin and cause of more than 1100 fires to include commercial structures, residential structures, and vehicles. He has completed numerous educational seminars and continuing education courses in the field of fire investigation. Mr. Kennedy has testified and been qualified as an expert witness in court proceedings and depositions involving the investigation of fire.

Mr. Kennedy has coordinated and instructed continuing education training seminars in fire investigation for the American Academy of Applied Forensics and local community colleges for fire investigators and law enforcement investigators tasked with the investigation of fire and explosion incidents. Mr. Kennedy has also given presentations as a guest lecturer on Investigating Arson, Post Blast Investigations, and Evidence Collection Procedures for the Fire Engineering Technology Program at the University of North at Carolina at Charlotte.

In addition to his investigative experience, Mr. Kennedy has more than 21 years of combined military and public safety experience. He also has extensive experience as a Firefighter and Fire Captain in fire suppression operations. Throughout these years of experience Mr. Kennedy has been recognized by the departments and communities he has served for exceptional services and going above and beyond the call of duty.

EDUCATION AND PROFESSIONAL ASSOCIATIONS

Pfeiffer University, Charlotte, NC
Bachelors in Criminal Justice, Current Student

Rowan Cabarrus Community College, Concord, NC
Firefighter I and II, 1998; North Carolina EMT-I, 1998

Central Piedmont Community College, Charlotte, NC
Law Enforcement Technology, 1990; Architecture Program, 2003; Auto Theft, Fraud and Arson, 2005; Arson Detection and Investigation, 2001

Federal Law Enforcement Training Center, Glynco, GA
Bureau of Alcohol, Tobacco, and Firearms, Advanced Cause and Origin / Expert Witness Testimony, 2002

Bureau of Alcohol, Tobacco, and Firearms State and Local Training, Charlotte, NC
Post Blast Investigations, 2008

International Association of Arson Investigators
Expert Witness Court Room Testimony, 2007
Expert Report Writing, 2010
Certified Fire Investigator, 2010

National Association of Fire Investigators
Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, 2011
Certified Fire and Explosion Investigator (CFEI), 2011
Certified Vehicle Fire Investigator (CVFI), 2011